CHIEF OPERATOR
COURSE MANUAL

2015

CHIEF OPERATOR COURSE MANUAL
Overview/Preface

This manual is designed for operators taking the required Chief Operator Course. This tool, along with your operating experience and review of the Office of Water Programs California State University Sacramento manuals, will help you prepare for your duties as a chief operator.

Management and leadership are not only important, but are a large part of today's public utilities. Every utility needs capable supervisors. One common problem with most supervisors and managers is that they cannot find the time or resources to improve their supervisory skills.

This manual is an effort to create a resource that will ultimately increase your knowledge of the technical, financial and managerial aspects, otherwise known as capacity development, of your system. This manual is comprehensive in scope and sufficient in depth to address most inquiries. The manual is an invaluable tool for both newly appointed and experienced chief operators.

This manual should not be a stand-alone resource to assist chief operators with the skills necessary to become a better supervisor. With the great diversity and dynamics present in the water/wastewater treatment industry, it is important for operators to be resourceful – at least know enough to ask the right questions to the right people.

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Should the summarized information in this document be inconsistent with a governing rule or statute, the language of the rule or statute shall prevail.

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WEST VIRGINIA DRINKING WATER REGULATIONS

West Virginia has received approval from EPA to have primacy authority for enforcing public drinking water regulations at the state level. In other words, OEHS ensures all federal and state drinking water requirements are met. These state regulations can be accessed online at the West Virginia Legislature web site at www.legis.state.wv.us/. The OEHS **Environmental Engineering Division (EED)** Director, Walter Ivey, oversees several programs that make up the WV drinking water program. The following programs function as the multiple barrier approach in West Virginia:

- The **Source Water Assessment &** Wellhead **Protection (SWAP)** Program's mission is to assess, preserve, and protect the state's source waters which are used to supply water for the state's PWSs.
- The **Certification & Training (C&T)** Program provides training and/or testing to PWS operators, wastewater treatment works operators, backflow prevention assembly installers/testers, water well drillers, and monitoring well drillers to administer certifications.
- The **Infrastructure & Capacity Development (I&CD)** Program helps drinking water systems improve their finances, management, infrastructure, and operations so they can provide safe drinking water consistently, reliably, and cost-effectively.
- The **Compliance & Enforcement (C&E)** Program determines whether a PWS is in compliance with all state rules and federal regulations pertaining to the SDWA. Such determination is based on results of the chemical/contaminant monitoring required for each PWS. If a system is out of compliance, a violation is then issued requiring the PWS to do public notification activities to inform the public that here was a problem, what happened, and what they are doing to fix it.
- Data Management enters all data received from the **Monthly Operational Reports (MORs),** bacteriological reports, and chemical reports into a specialized database called **Safe Drinking Water Information System (SDWIS)**. Each PWS monitors and samples their water for various chemicals and contaminants that have the potential to be a public health risk.

The entire WV drinking water program is based in the OEHS central office located at 350 Capitol Street, Room 313 in Charleston, WV 25301-3713. The OEHS central office phone number is (304) 558-2981 and fax number is (304) 558-0139. The OEHS website is http://www.wvdhhr.org/oehs/eed OEHS also has 5 district offices to provide technical and administrative support locally to PWSs across the state:

- **Wheeling District Office** (304) 238-1145
- **Philippi District Office** (304) 457-2296
- **Kearneysville District Office** (304) 725-0348
- **Beckley District Office** (304) 256-6666
- **St. Albans District Office** (304) 722-0611

The OEHS not only enforces drinking water standards, such as those in the SDWA, but it is also responsible for establishing and enforcing standards and regulations for water system design, construction, operation and maintenance, well construction and placement, pumps, treatment processes, chemical addition, well abandonment, lab certification, and wellhead protection. To ensure water systems meet these state requirements, water system owners are responsible for obtaining plan approvals from the OEHS for well construction, pump installation, well

rehabilitation, chemical addition to water, water treatment, and new system capacity. Plan approvals help ensure that water suppliers provide a safe and dependable supply of water to their customers.

OEHS personnel enforce compliance with all appropriate codes and regulations by performing periodic on-site inspections of each system. These inspections are called sanitary surveys and their frequency depends upon the size and classification of the water system. During the sanitary survey, the OEHS representative will review the system's compliance and monitoring records and inspect the water system facilities. Following the inspection, the system owner will receive a written report listing any deficiencies or violations found. A PWS must respond within 45 days and establish time frames to correct the problem(s).

OPERATOR CERTIFICATION

Certified operators play a crucial role in protecting the health and welfare of West Virginia's citizens, which can be jeopardized if persons not properly qualified are allowed to operate water or wastewater systems. Operator certification helps protect human health and the environment by establishing minimum professional standards for the operation and maintenance of public utilities. While the specific requirements vary from state to state, the goal of all operator certification programs is to ensure that skilled professionals are overseeing the treatment and distribution of safe drinking water. Operator certification is an important step in promoting compliance with the SDWA and CWA.

The West Virginia Operator Certification Program was approved by EPA on February 20, 2002. West Virginia requires all public water systems to have a certified operator to effectively operate the system. Certified operators play a crucial role in protecting the health and welfare of West Virginia citizens, which can be jeopardized if persons not properly qualified are allowed to operate water supply systems. There are many disease-causing organisms and chemicals that may enter a system through the source water or through problems in the distribution system. Most contaminants cannot be seen or smelled, so proper system maintenance and monitoring is required to ensure the protection of public health. Water users expect a safe and adequate water supply and rely on the system operator to notify them if problems occur.

Protection of the water system is also an important job of the certified operator. Large amounts of money are required to design and install water sources, treatment facilities, distribution piping, valves and other components. Improper operation and maintenance of pumps, storage tanks and treatment systems can result in their early failure, and expensive repair or replacement. The need for responsible system operators is enormous. Competent system operations require someone with skill, knowledge and experience in operating, maintaining and troubleshooting water sources, treatment and distribution systems. Even if the operator will not be the one to repair or replace broken equipment, he/she must be able to recognize potential problems and take action to have problems corrected. Any individual making process control/system integrity decisions about water quality or quantity must be certified.

West Virginia's operator certification program is implemented by the West Virginia Bureau for Public Health, Office of Environmental Health Services, Environmental Engineering Division. In addition to providing applications and study material to prospective operators, the program administers the examination process, evaluates experience and education requirements, evaluates training events for continuing education credit approval, and tracks continuing education hours obtained by each operator.

West Virginia's Operator Certification Program:

- Provides applications and informational resources to prospective operators;
- Administers the examination process;
- Evaluates applicant experience and education;
- Evaluates training for continuing education; and,
- Tracks continuing education obtained by each operator.

To become a certified operator, an individual must:

1. Submit an application;

2. Attend any required training courses;
3. Pass a written examination specific for the size and type of system to be operated; and,
4. Meet minimum experience and education requirements;

Maintaining certification requires:

1. Applying for new renewal by submitting an application every 2 years;
2. Documented attendance at sufficient OEHS-approved continuing education courses (CEHs); and,
3. Continued employment as an operator in a public water or wastewater system.

Continuing Education Hours

Our understanding of drinking water quality and chemical and biological contaminants in water is changing almost daily. Similarly, better laboratory methods to find small amounts of chemicals, and improvements in diagnosing and tracking disease, more clearly define water that is truly safe to consume. Along with increased knowledge of health threats, which may be in drinking water, we have also increased our ability to prevent their occurrence, and to detect and remove them. Special sample collection methods, monitoring schedules and treatment options exist for a variety of possible contaminants. All certified operators, as well as system owners and managers, have a responsibility to keep up with changes in monitoring and reporting requirements. Also, it is important you are aware of new information on water quality and treatment and they maintain a basic level of knowledge.

West Virginia requires all certified operators, except Class 1D (water) and Class H (wastewater), to obtain **continuing education hours (CEHs).** Continuing education is essential to keeping up to date with water supply, treatment, maintenance, and monitoring information. The amount of continuing education that must be obtained depends on your certification classification.

For water operators:

- **Operators-in-Training (OITs) and Water Distribution (WD) operators are required to obtain 6 CEHs every 2 years.**
- **Class I operators are required to obtain 12 CEHs every 2 years.**
- **Classes II-IV are required to obtain 24 CEHs every 2 years.**

For wastewater operators:

- **Operators-in-Training (OITs) and Class C operators are required to obtain 6 CEHs every 2 years.**
- **Class S operators are required to obtain 3 CEHs every 2 years**
- **Class I-II operators are required to obtain 12 CEHs every 2 years.**
- **Classes III-IV are required to obtain 24 CEHs every 2 years.**

Operators are required to notify the OEHS in the event they are no longer the operator for a specific system. This is to emphasize the importance of having a certified operator at all times. A 30 day notice is required for voluntary terminations. Please complete and submit form ES-74 at least 30 days prior to quitting to stay in compliance with operator requirements and keep your certification. If you are fired, contact Certification & Training so they are aware your employment status has changed and provided them with your new or anticipated employment information.

Certification is personal. Each individual operator is responsible for keeping his/her certification current and ensuring all requirements are met. Please contact the Certification and Training Section at: for water requests call (304) 356-4266, for wastewater requests call (304) 356-4334, for renewal request call (304) 356-4335, or WVRWA at (304) 201-1689 if you have any questions concerning your responsibilities as a certified operator. The Certification and Training Section currently oversees information on more than 5,000 certified individuals including: water operators, wastewater operators, backflow prevention & assembly inspector testers, water well drillers, and monitoring well driller training in West Virginia. It is essential we work together and openly communicate.

PUBLIC UTILITY OWNER REQUIREMENTS

The owner of a public water system is responsible for meeting all of the legal requirements that apply to the system. An operator is a person who conducts day-to-day operational and technical activities related to the operation of a water supply. Although the owner may designate a chief operator, the owner is ultimately responsible for providing proper treatment and meeting regulatory requirements. It is important that both the owner and operator work together to ensure that the system provides meets all applicable requirements. **The ultimate goal for both the owner and operator is to provide safe drinking water to the public.**

The owner shall:

- Employ a Chief Operator with a certification equal to or higher than the system classification, except for lD PWSs. A PWS may have more than one (1) Chief Operator if jurisdiction is bifurcated between the distribution system and treatment plant or otherwise approved in writing by the Commissioner based upon a written request;
    - In the case of a distribution system not under the direct jurisdiction of the treatment plant Chief Operator, employ an additional Chief Operator with WDS, Class I or higher certification and an adequate number of certified operators to operate the distribution system.
    - Place direct supervision of their PWS, including each treatment facility and distribution system, under the responsible charge of the Chief Operator holding an adequate certification.
- In the case of collection systems not under the direct jurisdiction of the treatment plant Chief Operator, employ an additional Chief Operator with a Class C, Class I or higher certification and an adequate number of certified operators to operate the collection system. The owner shall:
    - Employ a Chief Operator to be on-site at all new wastewater systems, except for Class H, Class Sand Class C, when construction is twenty five percent (25%) complete; and
    - Place direct supervision of the wastewater system, including each treatment facility and collection system, under the responsible charge of the Chief Operator holding an adequate certification;
- Employee and adequate number of certified operators to operate the system;
- Not employ more OITs than the number of employed certified operators, unless written permission is granted by the Commissioner;
- Notify the Commissioner within twenty-four (24) hours if a certified operator or OIT terminates employment for any reason;
- Submit a personnel status report by July 15 every year. The report is to be in a manner and form approved by the Commissioner and required information includes, at a minimum: a list of all certified operators employed, the Chief Operator, and the system owner;
- Post a copy of the current certification of all certified operators employed at the system in a conspicuous location in the plant or system office.
- Employ an advanced certified operator to be on-site at all new advanced systems when construction is fifty percent (50%) complete. (Wastewater only)
- The owner of a Class H wastewater system shall ensure it is operated by a Class H, Class
- I or higher wastewater operator.
- The owner of a Class S wastewater system shall ensure it is operated by a Class S wastewater operator.

- The owner of a Class C wastewater system shall ensure it is operated by a Class C, Class I or higher wastewater operator.
- The owner of a lD system shall ensure it is operated by a lD, Class I or higher water operator.
- The owner of a Class R system shall ensure it is operated by a Class R, Class I or higher water operator.
- The owner of a WDS system shall ensure it is operated by a WDS, Class I or higher water operator.

These more specific reporting requirements will increase enforceability and enable the OEHS to have more current information. Previously, employment status changes were often discovered during site visits but not necessarily soon after changes occurred.

Responsibilities of the Public Utilities and OEHS

The public utilities system owner and operator, along with OEHS, work together to make sure that systems are meeting proper treatment and that all regulatory requirements are met. Providing safe water quality requires a team effort from systems, operators, and OEHS.

CHIEF OPERATOR REQUIREMENTS & RESPONSIBILITIES

The recently revised WV Water and Wastewater Regulations includes the following definition for chief operator that is more descriptive of responsibility:

- 64CSR4 states:
  The certified operator, designated by the owner, who is responsible for managing the daily operational activities of an entire PWS or a water treatment facility, or a distribution system in a manner that ensures meeting state and federal safe drinking water regulations.

- 64CSR5 states:
  The certified operator whom the owner designates to be responsible for managing the daily operational activities of a wastewater system or a collection system in a manner that ensures meeting state and federal Clean Water Act rules and regulations.

Every public utility owner must employ a chief operator with certification equal to or higher than the system classification. Therefore, all PWS', excluding 1D systems and the distribution portion only of a PWS under the direct jurisdiction of the treatment plant, must designate a chief operator. Therefore, all WW systems, excluding Class H and Class S system and the collection system portion only of a wastewater system under the direct jurisdiction of the treatment plant, must designate a chief operator. Be automatically designated as the Chief Operator if he or she is the only certified operator who meets the requirements.

To better support and prepare chief operators for their great responsibilities, the new regulation requires:

All new and current chief operators attend a course approved by OEHS for training as a chief operator.

Attendance of the designated course is also applicable for 6 hours of CEH credit for the renewal cycle. Current chief operators are required to take the next available class unless waived in writing. A person newly designated by the owner as the Chief Operator after the effective date of this rule shall attend the course within one (1) year. OEHS will develop a list of approved courses and make arrangements for additional course offerings. Class 1D water systems and Class H and S wastewater systems are exempt from this requirement.

As Chief Operator, it is your responsibility to keep up with regulations under development. Don't allow yourself to be caught off guard by new rules, regulations, and requirements! There are a number of tools available at your fingertips to keep you informed about proposed water regulation changes. Use them, and use them regularly. One great resource is the American Water Works Association (AWWA), which details government affairs and updates on its website. Another option is to make sure you are signed up on the Federal Register email list. You can never be too knowledgeable when it comes to drinking water regulations!

As an operator, you are responsible for operating the system in a way that both protects the public health, and the communities investment in the infrastructure of your facility. This will require dedication to your job, and a genuine interest in the work.

Being a competent chief operator requires:

- Accountability
- Willingness to learn
- Ability to work without supervision

You will need to consider all aspects of the operation at all times. This means everything from meter reading to managing the facility. You are protecting your community's investment, and most importantly their health.

A certified chief operator is responsible for the day to day operation of the public utility system to ensure the delivery of safe water at all times by complying with all state and federal regulations. The way this is accomplished is by the completing the following tasks. These tasks may vary depending on the size of your system, the type of water source and the complexity of treatment.

- Attend training to meet state primacy agency's continuing education requirements;
- Attend training programs and workshops to keep current of technical improvements;
- Be aware of all changes in regulations regarding water treatment;
- Be available to accompany regulatory officials for on-site inspections when given adequate notice;
- Collect or oversee the collection of water samples as specified by OEHS/DEP;
- Communicate with the owner, manager, or board about technical and financial needs of your system;
- Conduct frequent system and security inspections;
- Develop and maintain a plan for monitoring system process controls and meet all related goals;
- Educate other staff on emergency procedures and keep contact information up to date;
- Ensure that all samples are tested by a WVBPH certified lab;
- Ensure that all treatment equipment is maintained and operated properly according to the manufacturers' specifications and recommendations;
- Ensure that daily chemical analyses are properly measured and recorded;
- Ensure that OEHS/DEP approval has been obtained prior to starting treatment or changing chemical types and/or manufacturers;
- Inspect critical facilities and components, including door locks and fencing, as part of daily inspections;
- Inspect, flush, clean and disinfect the water distribution system as needed per OEHS regulations;
- Investigate water quality and quantity problems and take corrective measures as needed in a timely manner;
- Keep accurate operational records;
- Keep accurate records of repairs and routine maintenance performed on the treatment equipment;
- Keep accurate records of water analyses, repairs, maintenance and correspondence;
- Make all chemical adjustments and add all chemicals when necessary;

- Measure and record all chemical dosage rates as needed;
- Maintain a consumer complaint log, including how complaints are resolved;
- Oversee and monitor all repairs performed on the public water system;
- Review all water quality analyses for completeness prior to submission to OEHS/DEP;
- Report all violations to OEHS/DEO and issue public notices when needed;
- Update system maps when a significant change to the system has been made; and,
- Utilize appropriate safety equipment.

Chief operators are also responsible for training of any Operators-in-Training (OITs) at their system. The Chief Operator must review and sign the OIT application (EW-211) within 30 days of new employee hire as well as document in writing when the OIT has sufficient work experience to upgrade to a certified operator. Certified experience is the only experience counted towards upgrade so it is important to ensure all operators or individuals employed by the system conducting operator duties are currently certified. Public utilities may not employ more OITs than the number of currently employed certified operators, unless written permission is granted by OEHS.

OPERATOR'S RESPONSIBILITIES

Each water utility represents a large financial investment in facilities and equipment and improper operation and maintenance can quickly damage both. An operator is the person who is, in whole or part, responsible for the operation of your system. Becoming a competent operator requires the development of many skills. At times, he/she may be a manager, laboratory technician, mechanic, meter reader, and a public relations specialist. To become a competent operator one must have a strong interest and desire for the job. Becoming a competent operator means; being accountable, having the will to learn, and to work without supervision. Even though many aspects of a system can be "out of sight", they should not be "out of mind" for the treatment plant operator. By properly maintaining the system, a competent operator provides a large degree of protection for a community's great investment in infrastructure. The operator also protects the health and well-being of customers by producing a safe finished product.

Our understanding of drinking water quality and chemical and biological contaminants in water is changing almost daily. All certified operators, as well as system owners and managers, have a responsibility to keep up with changes in monitoring and reporting requirements. It is important they are also aware of new information on water quality and treatment and they maintain a basic level of knowledge.

A certified operator shall:

- Be responsible for his or her certification
- Notify the Commissioner at least thirty (30) days prior to voluntarily terminating employment with a public water system in a manner and form approved by the Commissioner;
- Obtain the necessary amount of CEHs and retain documentation of attendance required for his or her renewal application;
- Ensure that the renewal applications are submitted at least thirty (30) days before the required date and no earlier than sixty (60) days prior to expiration, in a manner and form approved by the Commissioner; and
- Have the original personal certification card issued by the Commissioner upon his or her person at all times the operator is operating the public water system.
- Not work in a public water system under the certification of another; only the person whose name appears on the operator certification is certified by that document.
- Demonstrate data integrity by providing complete, accurate, and true information for the period in which he or she was responsible for data collection, including but not limited to, records, reports, and lab results.

RENEWAL AND CERTIFICATION REQUIREMENTS

All operator certifications require renewal every 2 years. Although this is not new for all certifications, it adds clarification that OITs are also renewable. The experience requirements for all certifications are now measured in hours instead of years to help improve proper credit with a variety of employment schedules. For example, instead of 1 year (assuming full time) experience, it is listed as 2,000 hours for a Class I operator.

Federal guidelines require continuing education for all certified operators. The regulations require all certified operators (except 1D, Class H, and Advanced Designation Wastewater) continue to receive training related to water/wastewater treatment and distribution/collection to promote continued learning and professionalism, more efficient operation, and a better understanding of emerging technologies and trends.

OIT minimum education requirements can be waived by the Commissioner, in writing, to a minimum age of 16 and completion of the 10th grade with a current school transcript and 2.0/4.0 grade point average. The intent of this is to allow interested students to receive water or wastewater treatment related training earlier in their academic career paths and help promote awareness of the water and wastewater treatment field.

OIT applicants must submit their renewal application at least 30 calendar days prior to their certificate's expiration date, in a manner approved by the Commissioner. The OIT shall attempt to pass the Class WD or I examination at least once during each 2 year renewal. The intent of the OIT CEH requirement is that if the OIT cannot pass the exam, CEHs may help them pass the next time around.

For Water Operators: Class WD operators must obtain 6 hours of continuing education hours, Class I operators must obtain 12 hours of continuing education hours, and Class II through IV must obtain 24 hours of continuing education hours for renewal.

For Wastewater Operators: Class S must obtain 3 hours of continuing education hours, Class C must obtain 6 hours of continuing education hours, Class I and II operators must obtain 12 hours of continuing education hours, and Class III through IV must obtain 24 hours of continuing education hours for renewal.

Certified operators who qualify for Class WD, Class H, Class S or Class C certification in addition to a current Class I or higher certification shall hold the certifications concurrently, but only maintain the renewal requirements for the highest certification held.

No required continuing education hours are required for Class 1D water or Class H or Advanced Designation for wastewater.

The regulations also clarify that it is the duty of each certified operator to obtain the necessary amount of appropriate CEHs and retain documentation of attendance required for the renewal application. All certified operators must now ensure renewal applications are submitted no earlier than 60 days prior to expiration, in addition to the previous requirements, to facilitate proper data management and timely processing.

All continuing education units (CEUs) must be preapproved by the Commissioner for relevancy so that the applicant knows beforehand the courses are enough, or if additional course work will be needed. 100% credit will be awarded to CEUs deemed directly related to water treatment and distribution otherwise 50% credit will be awarded.

Keep in mind, **all operator certification requirements are based on federal and state regulations to ultimately protect public health.** Each certified operator is responsible in providing adequate treatment to meet federal and state regulations. It is essential these operators not only achieve these minimum requirements for certification but continue to gain knowledge and acknowledge the public health foundation of their career choice in the drinking water industry. Please contact the Certification and Training Program at any time to discuss any aspect of the operator certification program.

WASTEWATER FEES

Type	Amount
Class HR Initial and Renewal	No Fee
Class H Initial and Renewal	$100
Class S Initial and Renewal	$100
Class C Initial and Renewal	$100
OIT Initial and Renewal	No Fee
Class I Initial and Renewal	$125
Class II Initial and Renewal	$150
Class III Initial and Renewal	$175
Class IV Initial and Renewal	$200
Advanced Designation	No Fee
Renewal Late Fee	$25

Note: Individuals who hold multiple wastewater operator certifications shall pay the initial fee for each and only the renewal fee associated with the highest level certification held thereafter.

COMPLIANCE AND ENFORCEMENT METHODS

The operator regulations are now more specific on the definitions of suspension and revocation. Suspension is effective for an initial period of less than 1 year, revocation is effective for a period of more than 1 year. Both actions result in operator's certification being invalid. Revocation requires reexamination at the former certification level and fulfillment of CEH requirements. The process for compliance and enforcement actions is also more clearly defined as notification via certified mail with the action proposed, effective date, reasons and length of time of the proposed action. The regulations also enable the Commissioner to establish an Advisory Board consisting of at least 5 certified operators and a designated chairman.

OPERATOR FORMS

Remember all forms must be complete, legible, signed and dated, and timely with all required documents attached (copy of diploma, CEH certificates, etc.) for processing. Also remember to use the most current version of each form. All forms are available on the OEHS website at http://www.wvdhhr.org/oehs/eed/swap/training&certification/forms.asp or by phone request from the Certification and Training Program at (304) 356-4335.

ES-53 Request for Wastewater Operator Certification: Use this form when applying for examination or certification.

ES-59 Summary of Wastewater Treatment Plant Operations:

EW-74 Water or Wastewater Operator Resignation Notice: Use this form when voluntarily terminating employment to ensure proper notification.

EW-75 Application for Certification as a Backflow Prevention Assembly Inspector/Tester (BPAIT): Use this form when applying for initial, reinstatement, or renewal of BPAIT certification.

EW-76 Request to be Included on the West Virginia's Contract Operator List: Use this form to be included as a contract operator.

EW-78 Operator Continuing Education Hour (CEH) Application: Use this form when applying for a course to be considered for CEHs.

EW-102 Request for Water or Wastewater Operator Certification Exam: Use this form when applying for examination or certification as an operator.

EW-104 Personnel Status Report/Employment Changes: All public utilities must submit this form by July 15th every year to facilitate accurate information on all certified personnel currently employed.

EW-107 Certified Operator Requirement Waiver: Use this form when applying for a certified operator requirement waiver.

EW-108 Request for Water or Wastewater Operator Certification from Another Jurisdiction: Use this form when you are certified by another jurisdiction outside of WV and seeking certification as a WV operator to document your competency.

EW-211 Request for Water Operator Certification: Use this form when applying for examination or certification.

EW-212 Request for Water or Wastewater Operator Certification Renewal: Use this form for renewal of operator certifications.

GUIDANCE FOR CERTIFIED WATER OPERATORS

OEHS Certification and Training (C&T) Program staff takes pride in reviewing and processing each operator application based on quality, timeliness, and fulfillment of all current certification regulation requirements. However, if applications are incomplete or required information is not submitted or is illegible, our job is more difficult and timeliness of your certification is reduced. By adhering to the following guidelines, initial certification or renewal will proceed more effectively.

1. Know the rules and regulations for your profession and how to receive and maintain your certification(s). This includes knowledge of education and experience requirements and associated timelines. West Virginia Administrative Rules, Title 64 Series 4, *Public Water Systems Operators* are available online from the Secretary of State website at **http://apps.sos.wv.gov/adlaw/csr/ruleview.aspx?document=2606**. If you have any questions on these regulations, contact C&T for clarification.

2. Know the proper forms required to initially become certified and renew your certification (if required). Knowing what forms to use and having them available in your work area will facilitate meeting the required timelines. All current forms are available by calling us at (304) 356-4335. Always read carefully and complete the forms in their entirety, which includes a signature and date for proper documentation. Incomplete applications will be returned.

3. Make sure any classes you take toward certification upgrade or renewal are already approved by OEHS. All classes must be approved by the Commissioner and attendance documented by the operator before OEHS will accept the continuing education hours (CEHs) for operator renewal requirements. All approved CEHs have a unique, 7-digit CEH number. Taking unapproved classes and failing to provide class certificates upon completion may result in the need for you to take additional classes and delay processing your application. **Contact the instructor or their supervisor if you have not received appropriate certificates with the corresponding approved CEH number and course title for all of your training.** You may also contact us at (304) 356-4335 to ask if a course has been approved for CEHs.

4. Do not procrastinate on taking classes for renewal. Hundreds of classes have been approved, some indefinitely. By waiting until the last few months before your renewal, you increase the chance of the class being full, cancelled, possible sickness on your part, having to stay at work due to problems, etc. There are two (2) years in between certification renewals for all water and wastewater operators. Requesting extensions for more time to obtain required continuing education is unacceptable and indicates poor career management on your part.

5. Share good information. The articles you are reading often contain valuable information. Please ensure it is reviewed by staff and coworkers.

By following the above guidance, C&T can provide timely certifications and renewals for everyone. Please contact us with any questions or concerns at any time. We oversee approximately 5,000 individual certifications, which are each unique, personal, and very important. Open communication is essential in facilitating all operator certification needs and ultimately protecting drinking water.

PUBLIC WATER SYSTEM CLASSIFICATION

The classification of PWS has been changed from a point rating table to a descriptive definition based on source, population served, and treatment requirements. In general, the system complexity will continue to determine the required operator classification. All PWS will be reviewed as part of the sanitary survey conducted by District Office staff. This timeframe enables existing staff to reevaluate each system. Exceptions to this schedule will be made if requested in writing or if other problems arise. If reclassification occurs, systems must communicate with OEHS to ensure proper operator coverage. OEHS recommends operators at systems likely to change to start training and working towards the appropriate classification.

Class 1D

All transient non-community water systems that have ground water only as a source, and do not use gaseous chlorine or chlorine dioxide as a means of disinfection, and do not treat for the removal of nitrate or nitrite, or both. Ground water sources that use gaseous chlorine, chlorine dioxide as a means of disinfection or have treatment for removal of nitrate or nitrite, or both, are considered a Class I public water system.

Class WD

A public water system that obtains all of its water from another public water system, and is not owned or operated by the supplying public water system. The system does not have any other source of water other than water from the supplying public water system. A WD system may apply chorine for supplemental disinfection.

Class I

Community and non-transient non-community public water systems that use ground water only, serve a population of less than 10,000 (including consecutive connection population), and do not treat for a primary contaminant.

Class II

All public water systems that use a surface source or a ground water under the direct influence of a surface water source, serve a population of less than 10,000 (including consecutive connection population), and do not have any additional treatment units within the treatment plant for identified primary contaminants in the source water. Treatment installed for removal of Cryptosporidium is considered an additional treatment unit. Class II also includes all public water systems that use ground water only, serve less than 10,000 population, use at least one radial water collector well as a source, or treat for at least one primary contaminant identified in the source water, or both.

Class III

All public water systems that use surface or a ground water under the direct influence of a surface water source, serve a population of at least 10,000 (including consecutive connection population), and do not have any additional treatment plant for identified primary contaminants in the source water. Class III also includes all public water systems that use ground water only, serve a population of at least 10,000 and use at least one radial water collector well as a source.

Class IV

A public water system that uses a surface or a ground water under the direct influence of a surface water source and serves a population of at least 20,000 (including consecutive connection population).

WASTEWATER SYSTEM CLASSIFICATION

A wastewater system is classified on the basis of the permitted flow capacity and complexity of wastewater treatment processes.

Class H

A lagoon, aerated lagoon, stabilization pond, recirculating media filter, package treatment plant, or a small wastewater system with flows less than 600 gpd. This rule does not apply to septic tanks serving individual homes.

Class S

A lagoon, aerated lagoon, stabilization pond, recirculating media filter, package treatment plant, or a small wastewater system with flows greater than 600 gpd, but less than or equal to 0.05 MGD. It can also be multiple individual septic tanks within a managed residential district. Individual home owner septic tanks are only included in this class if they are maintained under the jurisdiction of a responsible management entity. This classification was previously referred to as IS.

Class C

A facility upstream of the wastewater treatment plant used to collect and convey wastewater. It may include pumps, valves, manholes, tanks and other appurtenances. These facilities are also known as a collection system. This class does not include Class S facilities.

Class I

A lagoon, aerated lagoon, stabilization pond or wastewater system with flows greater than 0.05 MGD, but less than or equal to 1.0 MGD. This class includes extended aeration package treatment plants with flows greater than 0.05 MGD, but less than or equal to 0.1 MGD.

Class II

A lagoon, aerated lagoon, stabilization pond or wastewater system with flows greater than 1.0 MGD, but less than or equal to 1.75 MGD. This class includes extended aeration treatment plants with flows greater than 0.1 MGD, but less than or equal to 1.75 MGD.

Class III

A facility with flows greater than 1.75 MGD but less than 6.0 MGD.

Class IV

A facility with flows equal to or greater than 6.0 MGD.

WAIVERS AND VARIANCES

Operator waivers and system variances, or in other words exceptions to the certified operator requirements, do exist. However, they are the exception, not the norm, and have strict guidelines.

OEHS's decision to issue an operator waiver has several steps. First, a written request from the system explaining the situation(s) creating a need for the waiver is received by OEHS Certification and Training Program or district office. Public utilities must document effort(s) made on their part to address the situation. For example, the vacancy was posted and no qualified candidates applied or an emergency occurred involving one of our certified operators. A waiver should be a last resort, **not** a safety net for poor planning and management. Once the written request is received, OEHS will seek recommendation from the appropriate district office engineer. Generally, they will state whether or not the system is in need, and if the proposed operator can adequately performs the required functions. OEHS will also make sure the requesting system chief operator recommends approval of the waiver request, if it did not originate from he or she. The written request will then receive a written response from the OEHS EED Director with specifics on the decision and with copies provided to all involved individuals. Operator waivers are situation, operator, system, and time specific to ensure consistency in implementation of regulations.

There are also PWS operator variances. The Environmental Health Procedures DW-36 outlines Operator Exception Requests for Automated Public Water Systems. In general, an DW-36 requires: a minimum one (1) year continuous operation before we would consider issuing and a PWS classification level of Class II or higher. These types of PWS variances are handled by OEHS IC&D.

Even with any waivers or variances, all PWSs still must have a Chief Operator with certification equal to or greater than the PWS classification **and adequate number of certified operators to operate the system**.

OPERATOR COMPLIANCE-IT'S THE OPERATORS' RESPONSIBLIBITY

Roles & Responsibilities – All system operators share several key responsibilities that are critical to meeting your ultimate goals of providing an adequate and safe supply of drinking water. Additional responsibilities, which can vary depending on the size of your system, are characteristics (e.g., complexity of treatment), managerial structure and regulatory requirements.

Regulatory Compliance – You must comply with all relevant regulations to protect your customers' health. General responsibilities are:

- Develop and maintain a sampling plan, designed to protect the system that covers all monitoring requirements;
- Collect or oversee collection of samples;
- Conduct routine inspections of wells or surface water sources and watersheds to identify potential sources of contamination;
- Address any problems quickly and ensure that all required follow-up steps are taken (e.g., additional sampling, public notification, sanitary survey or other compliance inspection);
- File all required reports and maintain records;
- Resolve any compliance problems, in consultation with regulators, and gather information on upcoming regulations; and,
- Increase awareness of tools, reference materials, and other state and federal resources.

System Operation – Keep all system components (i.e., source, treatment, storage and distribution) functioning efficiently and effectively. General responsibilities are:

- Monitor chemical feed and other system components;
- Monitor effectiveness of treatment;
- Prepare and maintain records of meter readings, tests, equipment, chemical use, correspondence, and customer complaint log;
- Develop a maintenance plan for the treatment plant and distribution system;
- Regularly read meters and gauges, making adjustments as needed;
- Periodically flush distribution system using hydrants and blow-off valves;
- Conduct preventive and routine maintenance on facilities and equipment;
- Periodically assess efficiency of system components (e.g., pumps and valves);
- Conduct frequent system and security inspections;
- Update system maps when a significant change to the distribution system has been made;
- Make all process control/system integrity decisions necessary to maintain the quality and quality of water delivered to customers;
- Attend training to meet state primacy agency's continuing education requirements; and,
- Create and follow **standard operating procedures (SOPs)**.

SAFE DRINKING WATER ACT

The **Safe Drinking Water Act (SDWA)** sets permissible levels of substances found in water which could be hazardous to public health. These regulations include MCLs for inorganic and organic chemicals, radioactivity, turbidity and microbiological levels. Testing and monitoring requirements, reporting and record keeping schedules, and public notification are enforced by OEHS.

The SDWA gives the EPA the authority to set drinking water standards. Drinking water standards are regulations the EPA sets to control the level of contaminants in the nation's drinking water. There are two categories of water standards: the Primary Drinking Water Regulations and the Secondary Drinking Water Regulations.

A **National Primary Drinking Water Regulation (NPDWR)** is a legally-enforceable standard that applies to public water systems. Primary standards protect drinking water quality by limiting the levels of specific contaminants that can adversely affect public health and are known or anticipated to occur in water. They take the form of MCLs or **Treatment Techniques (TT's).**

A **National Secondary Drinking Water Regulation (NSDWR)** is a non-enforceable guideline regarding contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste and odor) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply.

A list of all the NPDWRs AND NSDWRs is located in the appendix.

Maximum Contaminant Level (MCL) and Maximum Contaminant Level Goal (MCLG)
A MCL is the highest level of a contaminant that is allowed in drinking water. Before setting a MCL for any health related drinking water contaminant, the SDWA requires EPA to set what are called MCLGs. The MCLG is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin or safety. MCLs are set as close to the MCLGs as feasible using the best available treatment technology. Realizing that, in some cases, it is not technologically or financially feasible to achieve the MCLG for all contaminants, EPA establishes MCLs for all regulated contaminants in drinking water. In doing so, they take into account such factors as health risk assessments, cost-benefit analysis, and BATs, in establishing acceptable levels. BAT refers to the technology currently available to detect and treat the contaminant of concern. MCLs are the "drinking water standards" that all public water systems must meet. It is important to remember that MCLs are not set in stone. As new health effects data becomes available, MCLs are adjusted either up or down, depending on what the latest data shows.

Treatment Technique (TT) Requirement
For some contaminants, establishing a specific MCL is either not possible or too costly to mandate. For such contaminants, EPA may also choose to require a specific water treatment process intended to reduce the level of a contaminant in drinking water, called a **Treatment Technique (TT),** which, when implemented by the water system, would reasonably protect public health. Examples of TTs are corrosion control for reduction of lead and copper, and filtration for removal of particulates in surface water.

Secondary Maximum Contaminant Levels (SMCLs) which apply to public water systems and which, in the judgment of the Administrator, are requisite to protect the public welfare. The SMCL means the maximum permissible level of a contaminant in water which is delivered to the

free flowing outlet of the ultimate user of public water system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

Record Keeping Requirements

Public water systems must retain copies of their records for certain lengths of time depending on the type of record. Monitoring records must contain certain information and must remain on the premises or at a convenient location near the premises.

- The following is a general listing of the types of records and the length of time they must be kept:

Time Line	Records
2 years	Copies of Backflow Testing Results
3 years	Records of action to correct violation
3 years	Copies of Public Notices
5 years	Monthly Operational Reports
5 years	Bacteria Analysis
5 years	Records concerning a variance or exemption
10 years	Copies of written reports, summaries, or communications relating to sanitary surveys
10 years	Radiological, chemical and turbidity analysis
12 years	Lead and copper results and reports
Indefinitely	CT Benchmarking and Profiling results

SAFE DRINKING WATER RULES AND REGULATIONS

SDWA Rule	Risk Type	Coverage	Overview	Monitoring
Total Coliform Rule	Microbial	All PWS	Monitoring for coliform as indicator of potential contamination.	Sampling based on population; requires confirmation for positive coliform.
Surface Water Treatment Rule	Microbial	All PWS that use SW or GWUDI*	Establishes criteria when filtration is required. Systems must filter and disinfect or apply for reduced monitoring.	1. Inactivation Ratios 2. Residual Disinfectant Concentration (RDC) 3. Turbidity
Phase I, II, V Rule	Chemical and Radiological	CWS and NTNCWS	Establishes MCLs or treatment for 66 chemicals (IOC, VOC and SOC)	Nine Year compliance cycle with 3 year compliance period
Nitrate and Nitrite only	Chemical and Radiological	All PSW	Establishes MCLS or treatment	Once per year
Lead and Copper Rule	Chemical and Radiological	CWS and NTNCWS	Establishes treatment techniques for corrosion control, source water, and lead service line replacement and public education triggered by levels at consumer taps.	Consumer taps during each 6-month period. Two consecutive periods triggers corrosion control, or reduced monitoring.
Stage 1 Disinfection Byproducts Rule	Chemical and Radiological	CWS and NTNCWS	Reduce levels of disinfectants and DBPs. Sets MCLs for HAA5s, chlorite, bromate, and TTHMs and MRDL and MRDLG**	1. Monitoring for DBP. 2. For surface water and GWUDI, TOC and alkalinity.
Filter Backwash Recycling Rule (FBRR)	Microbial	PWS or GWUDI that use conventional or direct filtration	Requires systems to return backwash for filtration.	Complete upgrades by 6/8/06
Consumer Confidence Reports		All CWS	CCR to customers about the quality and health implications of community water supply.	Monitoring and results and violations must be reported.
Public Notification		All PWS	Divides Notification to Public for violations into 3 tiers: Tier 1-Serious Health Effect-within 12 hours Tier 2-Health Potential-within 30 days Tier 3-Not immediate health impact-one year	Tier monitoring results must be reported to public in timely manner.
Arsenic and New Source Contaminants	Chemical and Radiological	CWS and NTNCWS	Sets MCL and monitoring requirements for arsenic at 0.010 mg/L	Places arsenic monitoring with other IOCs***
Radionuclides Rule	Chemical and Radiological	CWS	MCL for monitoring at each entry point and reporting, sets public notification requirements	Places monitoring for gross alpha and Radium 226 and 228 and Uranium in standard framework. Also beta if affected.

SDWA Rule	Risk Type	Coverage	Overview	Monitoring
Interim Enhanced Surface Water Treatment Rule	Microbial	PWS and GWUDI that serves more than 10,000 persons	Sets requirements for microbial contamination including 2 log reduction of*Cryptosporidium* and prevents risk associated with DBP requirements	Combined filter effluent every for 4 hours; Continuous turbidity monitoring on each filter every 15 minutes; NTU ≤0.3 95% of time, Maximum level of 1 NTU Disinfection Profiling each week
Long Term 1 Enhanced Surface Water Treatment Rule	Microbial	PWS and GWUDI that serves less than 10,000 persons	Sets requirements for microbial contamination including 2 log reduction of*Cryptosporidium* and prevents risk associated with DBP requirements	Combined filter effluent every for 4 hours; Continuous turbidity monitoring on each filter every 15 minutes; NTU ≤0.3 95% of time, Maximum level of 1 NTU Disinfection Profiling each week
Groundwater Rule	Microbial	PWS that use GW	Sets requirements for viruses and bacteria	Sets inactivation levels for viruses (4-log)
Radon Rule	Chemical and Radiological	CWS that use GW, mixed GW or intermittently use GW	Regulates exposure to radon	Results trigger additional or reduced monitoring
Stage 2 Disinfection Byproduct (DBP) Rule	Microbial	CWS and NTNCWS that do not use UV	Works in combination with Long Term Enhanced Surface Water Treatment Rule	Initial Distribution System Evaluation to determine monitoring sites
Long Term 2 Enhanced Surface Water Treatment Rule	Microbial	PWS that use surface water and GWUDI	Regulates treatment for source water	For systems serving under 10,000; *Cryptosporidium* and E. coli monitoring

WEST VIRGINIA SOURCE WATER ASSESSMENT PROGRAM

In 1996, Congress required all states to develop and implement program elements to protect the sources for all public water supplies by adopting Amendments to the Safe Drinking Water Act. In West Virginia, the Department of Health and Human Resources (DHHR) is developing the Source Water Assessment and Protection (SWAP) program. It was developed with input from other government agencies, private agencies, and public interests. The DHHR, Bureau for Public Health (BPH) is responsible for ensuring that source water assessments are completed for all of West Virginia's public water systems. West Virginia's goal is to assess all sources serving public water supply systems in the next several years.

In West Virginia, the **Source Water Assessment and Protection Program (SWAP)** encompasses both the wellhead protection and surface water source water assessment efforts. Implementation of the wellhead protection program began in the early 1990's, as part of West Virginia ground water protection strategy. This protection strategy was extended to surface water sources with the 1996 Safe Drinking Water Act Amendments. The Act require states to develop and implement a Source Water Assessment and Protection (SWAP) program designed to evaluate the vulnerability of public drinking water systems to possible sources of contamination, and encourages states to work with these systems in developing protection and management plans.

How are sources being assessed?

A source water assessment provides information about the potential contaminant threats to public drinking water sources. Each source water assessment will:

- Determine where water used for public drinking water supplies comes from (delineate the source areas);
- Inventory potential sources of contamination that may impact public drinking water sources (contaminant source inventory); and
- Assess the likelihood of a source water area becoming contaminated (susceptibility analysis).

This information will be used as a building block in developing and implementing a voluntary community source water protection management plan as a barrier to drinking water contamination. The SWAP program will provide information to direct local and state efforts to protect public drinking water sources. This information will help the State to provide more effective public water systems oversight.

The SWAP Program will seek to:

- Maximize the use of existing information;
- Emphasize the use of a statewide geographic information system (GIS);
- Emphasize state and local partnerships; and
- Provide recommendations for future improvements and protection efforts.

How will the SWAP Program help the public?

A vulnerable or contaminated drinking water source puts a community at a disadvantage in planning and building future capacity for economic growth. SWAP assessments will help to continue or to enhance the following:

- Development of a source water management protection plan;

- Identification or knowledge of water quality issues that help maintain clean, safe drinking water and increase community awareness and participation;
- Allow preventive actions to be designed and implemented before the water system becomes contaminated by identifying contamination threats to water supplies and enhance emergency response;
- Provide information that may lead to improvements in raw water quality and reduced treatment costs; and
- Prioritization and coordination of actions by federal and state agencies to better protect public health and safety.

How will the SWAP Program apply to Wellhead Protection (WHP) Program?

Wellhead protection, required under Section 1428 of the federal *Safe Drinking Water Act*, was established to protect public ground water sources from contamination, and forms the cornerstone of the SWAP program. Wellhead protection involves many aspects of the SWAP program, including the delineation of the recharge area contributing water and the development of potential source water contaminant inventory. The ultimate goal is the development of a community-based drinking water source protection program. Elements of a comprehensive WHP program include the following:

- Formation of a steering committee;
- Public participation;
- Area delineation;
- Development of management approaches; and
- Contingency planning.

Many communities across West Virginia have initiated a local WHP program for protection of local drinking water supplies. These same elements will be promoted for source water protection of surface water sources.

Does "Managing the SWAP/WHP" mean telling people what they can do and cannot do on their property?

To a certain extent yes; however, ground and surface water belongs to the general public in West Virginia and protection is in everyone's best interest. Everyone drinks water and the community's economic viability may depend on having a safe drinking water supply. Further, the management strategies are not designed to necessarily preclude activities in the protection area; rather they are designed to take advantage of common sense and prudent practices to reduce the risk of water contamination. There are certain facilities that you would not want in your wellhead protection area (WHPA), e.g. landfills or large-scale chemical storage. There is no reason why industry cannot be within the WHPA, as long as practices are in place that will minimize the risk of contamination to the aquifer. Importantly, the management plan is developed locally, and is therefore tailored to the community's own needs and risks.

Even though preventive actions are taken, accidents and emergencies may occur. If contingency plans are in place, the risk to surface and ground water as a result of accidents or emergencies can be minimized.

In addition, WHPAs should be delineated and potential contaminant source inventories should be conducted for all possible future well sites. Considering this information, new well sites can then be chosen so that the risk of contamination is minimized.

If our system purchases all our water from another public water supply, do we need to participate in the SWAP program?

No, however you may wish to contact your supplier and encourage them to participate.

Consumer Confidence Reports (CCR)

Beginning in 1999, community water suppliers are to provide an annual Consumer Confidence Report (CCR) to each customer. This includes the following information, in addition to other requirements:

- The drinking water source type, commonly used name and location;
- Availability of the source water assessment and how to obtain it; and
- A brief summary of the system's susceptibility to potential sources of contamination.

Even if a water supplier has not received a source water assessment, they are encouraged to include any readily available information about potential sources of contamination in their report. The CCR will assist the public in making personal health-based decisions regarding their drinking water consumption.

In Summary

Source water protection programs are an integral element of communities overall public trust to deliver a safe potable drinking water supply to the citizens at minimal cost. SWAP also involves community residents in a cooperative effort affording public participation and distribution of information regarding their water supply.

THE CLEAN WATER ACT

The Clean Water Act (CWA), which was enacted in 1972, built the basic structure for regulating discharges of pollutants into the waters of the United States to maintain Water Quality Standards (WQS) for surface waters in the U.S. Before the Clean Water Act (CWA), however, the Federal Water Pollution Control Act of 1948 was the Nation's first major movement to address water pollution in the United States. Over time, the act was significantly reorganized and expanded and in 1972 became known as the Clean Water Act.

Under the CWA, EPA has implemented pollution control programs such as setting wastewater standards for industry. EPA has also set water quality standards for all contaminants in surface waters.

What the CWA Regulates

In order to protect and restore our nation's waterways, the CWA prohibits the discharge of any pollutants into "waters of the United States" unless the polluter has a permit issued under the CWA. Even if the discharger has a permit, however, the CWA says the conditions of the permit should be strict enough to "protect the public health or welfare" and "enhance the quality of water."

Who Administers the CWA

The EPA is charged with the overall administration of the CWA. In West Virginia, as in many other states, permitting authority has been delegated to the State. Specifically, the Division of Water and Waste Management, a division of the West Virginia Department of Environmental Protection (WVDEP), is the agency charged with issuing permits to industries and municipalities in West Virginia, http://www.dep.wv.gov/WWE

While permitting authority under the CWA has been delegated from the federal government to the state, both federal and state law apply. Therefore, two sets of laws and two sets of regulations govern administration of the Act here in West Virginia. However, the interaction between these laws and regulations can be complex. The best source of information about requirements for West Virginia discharges is the West Virginia Rules and Regulations for Water Quality, enacted by the WVDEP.

The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. EPA's National Pollutant Discharge Elimination System (NPDES) permit program controls discharges. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

What is the NPDES Program?

The National Pollutant Discharge Elimination System (NPDES) is a permit-based program designed to regulate the discharge of pollutants into U.S. waters. This program is one of the principal operating mechanisms of the Clean Water Act and the foundation of water pollution prevention and control in the United States.

Section 402 of the Clean Water Act prohibits the discharge of any pollutant from a point source into navigable waters of the United States unless the discharger has a National Pollutant Discharge Elimination System permit, more commonly known as an NPDES permit. Anyone discharging pollutants into the nation's waters without a permit or in violation of a valid permit is breaking the law. The corollary is that it is perfectly legal to discharge pollutants in compliance with a valid permit.

Who Receives NPDES Permits?

Under both West Virginia and federal law, all facilities that intend to discharge from a "point source" are required to obtain an NPDES permit. A point source is a discernible, confined, and discrete conveyance of pollution (e.g. a pipe, ditch, etc.). The requirements in each permit are contained in EPD's water quality regulations. These rules can be found here. Here are some examples of facilities that must obtain NPDES permits:

- **Municipal sewage treatment plants** – Municipal sewage treatment plants collect and treat wastewater from both industrial and residential users. The content of the wastewater may differ dramatically depending on whether the plant accepts waste from industrial users or merely from residential users. Municipalities discharge waste either as direct discharges (dumping waste directly into the water), or through sludge application. Typically, sludge application is the method where the municipality applies the waste to agricultural or rural land.
- **Industries** – The manufacturing process for most products results in a wide variety of by-products that must be disposed of in some fashion. Industries typically obtain NPDES permits in order to discharge these by-products–or pollutants–directly. For example, a facility that generates heavy metals (zinc, copper, lead, etc.) or other chemicals (e.g. cyanide) might obtain a permit from EPD to dispose of these materials by discharging them directly into the waterways. The alternative method is indirect discharge. The industry may obtain a permit to become an industrial user, allowing it to discharge waste indirectly by funneling it to a municipal sewage treatment plant.
- **Construction sites/Urban areas affecting stormwater** – Entities that pollute stormwater must also obtain NPDES permits. Urban storm sewers typically channel polluted runoff from streets, rooftops, parking lots, and other surfaces to water bodies. Controlling this major source of pollution is critical to improving and maintaining water quality in most populated areas of the country. Construction can also generate silt-laden runoff that threatens the quality of our rivers, streams, and lakes. For more information on stormwater controls, you may want to visit this guide which was created by GreenLaw and Upper Chattachoochee Riverkeeper.
- **Confined Animal Feeding Operations** (CAFOs or large-scale animal production facilities) – must obtain NPDES permits under West Virginia's rules. There are two sets of rules, one for swine operations and one for non-swine operations.
- **Other Point Sources** – Of course, this is not an exhaustive list of entities subject to the NPDES program. Regardless of whether they fit into one of the above categories, all point sources must obtain NPDES permits before discharging into our waterways.

Common Pollutants Regulated in NPDES Permits

You are probably wondering what types of pollutants permitted facilities are discharging and what effects these pollutants have on water quality. NPDES permits generally regulate three categories of pollutants: conventional pollutants, toxic pollutants, and non-conventional

pollutants. This section discusses each of these categories and provides a list of some of the most common pollutants being discharged into West Virginia's waters.

Conventional Pollutants
Conventional are those specifically defined in the federal regulations at 40 C.F.R. Sec. 401.16 and are representative of basic sewage components. They are biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform bacteria, oil and grease, and pH. These are relatively easy to test for and used for the basic limits in most permits. For example, all sewage treatment plant permits should have limits for all of these, except oil and grease. For industrial permits or sewage plants that need more advanced treatment due to the complexity of the waste make up or due to the size or sensitivity of the receiving stream, additional pollutants or parameters will need to be put in the permit.

Toxic Pollutants
Toxic pollutants are those pollutants that are particularly harmful to animals (including humans). Toxic pollutants cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions, or physical deformations in organisms that ingest or absorb them. The quantities and length of exposure necessary to cause these effects can vary widely.

Toxic pollutants are grouped into two categories: organics and metals. Organics include such things as pesticides, solvents, PCBs, and dioxins. Common metals include lead, silver, mercury, copper, chromium, zinc, nickel, and cadmium. Toxicity of heavy metals can kill fish, contaminate their flesh (decreasing their value as a food source), and impair water supplies.

Non-Conventional Pollutants
Non-conventional pollutants are those substances that are not classified as conventional pollutants or toxic pollutants but sometimes need to be included in permits due to the nature of the waste and/or to protect the receiving stream. Nutrients such as phosphorus and nitrogen are common non-conventional pollutants.

Examples of common pollutants:

- **BOD** – The five-day biochemical oxygen demand (BOD) is a measure of the organic strength or food value to the small organisms that can consume the waste. It is similar to the caloric content of food. BOD doesn't measure a particular chemical, but rather the general organic decay strength of the waste. It is called a "lumped parameter" because it is a measure of the impact of multiple pollutants, not the amount of a particular chemical. This is a common parameter violated by wastewater treatment plants.
- **Chemical Oxygen Demand (COD)** – A measure of the oxygen required to oxidize all compounds, both organic and inorganic, in water.
- **Chlorine** – Chlorine is added to water or wastewater, generally for the purpose of disinfection, but frequently for accomplishing other biological or chemical results. Chlorine also is used almost universally in manufacturing processes, particularly for the plastics industry.
- **Copper** – This is a heavy metal. Trace quantities of heavy metals are necessary for the growth of biological life, but excessive quantities will interfere with many of the beneficial uses of the water because of their toxicity. Toxicity of heavy metals can kill fish, contaminate their flesh (decreasing their value as a source of food), and impair water supplies.
- **Cyanide** – Cyanide is a very poisonous chemical. High levels will damage the cardiovascular system, central nervous system, kidneys, and all vital organs. A

teaspoonful of 2-percent cyanide solution can kill a human adult. Cyanide is one of the most toxic chemicals to which fish are likely to be exposed. Fish are about 1,000 times more sensitive to cyanide than are humans.

- **Dissolved Oxygen** (DO) – The oxygen freely available in water, vital to fish and other aquatic life. Adequate dissolved oxygen levels are absolutely vital for a healthy aquatic ecosystem. Low dissolved oxygen can kill fish and other aquatic life and hinder the water body's ability to break down pollutants and other organic matter. Because dissolved oxygen is important both for fish and other species and for the breakdown of organic matter, it is an important measure of water quality. Excessive pollutant loading into a water body causes eutrophication resulting in the rapid growth of plant life and the depletion of dissolved oxygen. (In West Virginia, water quality standards require a DO of no less than 5.0 mg/l with an average of 6.0 mg/l, with a daily average of 5.0 mg/l and a minimum of 4.0 mg/l for waters supporting warm water species of fish.)
- **Fecal Coliform** – This conventional pollutant is a bacteria found in the digestive tracks of humans and animals. Its presence in water potentially indicates the presence of pathogenic organisms.
- **pH** – pH measures the intensity of the basic or acidic condition of a liquid. pH levels may vary up to 14, with the lowest numbers being the most acidic, 14 the most basic, and 7 neutral. Natural waters usually have a pH between 6.5 and 8.5 (the permitted pH range for waters in West Virginia). This limit is intended to protect the receiving stream from extremely basic or acidic discharges that can negatively affect the dissolved oxygen levels available to plants and animals.
- **Lead** – Lead is a heavy metal. Trace quantities of heavy metals are necessary for the growth of biological life, but excessive quantities are toxic and will interfere with many of the beneficial uses of the water. Toxicity of heavy metals can kill fish, contaminate their flesh (decreasing their value as a source of food), and impair water supplies.
- **Phosphorus** – Phosphorous is naturally occurring in many forms in soil and water, but in high concentrations, it stimulates algal growth and causes low dissolved oxygen levels (i.e., robs the water of oxygen).
- **Temperature** – West Virginia's water quality standards provide for a maximum of 90° and/or rise of 5° above ambient temperature (for example, if the temperature of the water is 50°, it is unlawful to change that by more than 5°). More stringent rules apply to trout streams. Water temperature is one of the most significant environmental factors mediating aquatic productivity. Temperature affects virtually all metabolic processes of plant and animals, stimulates and controls reproduction, affects the solubility and diffusion of gases like dissolved oxygen, and affects distribution patterns of plants and animals. Higher than average water temperatures can kill animals and plants.
- **Total Suspended Solids** (TSS) – A measure of the suspended solids in wastewater, effluent, or water bodies, determined by tests for "total suspended non-filterable solids."
- **Turbidity** – Haziness in air caused by the presence of particles and pollutants or a cloudy condition in water due to suspended silt or organic matter.
- **Zinc** – This is a heavy metal. Trace quantities of heavy metals are necessary for the growth of biological life, but, excessive quantities are toxic and will interfere with many of the beneficial uses of the water, Toxicity of heavy metals can kill fish, contaminate their flesh (decreasing their value as a source of food), and impair water supplies.

These are just some examples of pollutants that you might see in a permit. Other limits may be placed for color, oil & grease, and many chemicals not listed here.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

The Division of Water and Waste Management's (DWWM) mission is to preserve, protect, and enhance the state's watersheds for the benefit and safety of all its citizens through implementation of programs controlling hazardous waste, solid waste and surface & groundwater pollution, from any source.

DWWM administers numerous programs to control surface and groundwater pollution caused by industrial, municipal and stormwater discharges, as well as oversight of construction, operation and closure of hazardous and solid waste and underground storage tank sites. DWWM also works to protect, restore and enhance West Virginia's watersheds through education, technical and financial assistance, comprehensive watershed assessments, groundwater monitoring, water quality standards recommendations, wetlands preservation, inspection and enforcement of NPDES permitted facilities, dams, hazardous and solid waste and underground storage tank sites.

Water and Waste Permits

The permitting section of the Division of Water and Waste Management is a major regulatory arm of the agency that manages all non-mining water permits, solid waste permits and hazardous waste permits.

GENERAL NPDES PERMITS

Non-Stormwater General Permits

General Permits are issued to cover a class of facilities with similar type discharges under one permit. Rather than issuing individual, site specific permits to each facility, permittees are registered for coverage under a General Permit for that activity. The majority of the work involved is performed up-front in issuing the General Permit, streamlining the permitting process and saving both the agency and the regulated community time and money. The Division of Water and Waste Management issues the following ten non-stormwater permits.

Sewage Sludge - Land Application and Disposal to a POTW

There are two General Permits to cover the disposal of sewage sludge and domestic septage by West Virginia Health Department licensed septic haulers. WVSG10000 covers septage haulers who dispose of sludge by land applying at land application sites listed in their permit application, while WVSG20000 covers septage haulers who dispose of sewage sludge at publically owned treatment works.

INDIVIDAL NPDES PERMITS

National Pollutant Discharge Elimination System (NPDES) Individual Permits

The Division of Water and Waste Management implements programs to control surface water pollution caused by point source discharges of wastewater from public and private sewage collection and treatment systems, industrial wastewater treatment facilities, and municipal and industrial landfills. The terms and conditions of individual WV/NPDES Permits require the installation, operation and maintenance of appropriate wastewater treatment technology, and protect and enhance the quality of the West Virginia waters. The individual WV/NPDES permit process takes up to six months to complete, and includes the development and advertisement of a Draft Permit, and opportunity for the public to comment and to request a public hearing. Application fees range from $50 to $15,000, and are dependent on the type of facility regulated by the permit, the characteristics of the wastewater discharge, and the volume of wastewater associated with the discharge. Additionally, individual WV/NPDES Permits are subject to Annual Permit Fees ranging from $50 - $5,000.

Municipal - Domestic Waste Water Facilities
This permit is for the installation, operation and maintenance of a disposal system or part thereof, for the direct or indirect discharge of treated sewage into the waters of the State. It is applicable to private sewage treatment facilities and Publicly Owned Treatment Works (POTWs), although terms and conditions may vary by facility type. Any size sewage treatment facility may be regulated by an individual WV/NPDES Permit, but small facilities (less than or equal to50,000 GPD) should review information on the available General Permit. Owners/operators of small facilities will prefer registration under the General Permit due to its less burdensome application requirements and lower application fees. All individual Permits contain effluent limitations that require compliance with the BOD-5-,TSS, and pH standards of the Secondary Treatment Regulations of 40 CFR 133. More stringent water quality-based effluent limitations for BOD-5 and Nitrogen may be imposed in Permits where such are required to protect the dissolved oxygen water quality standard in the receiving stream. Permits may also contain water quality based effluent limitations for Fecal Coliform, Total Residual Chlorine, Copper, Lead, Zinc, or any other toxic pollutant expected present in the discharge in amounts that could violate Water Quality Standards. Permits for POTWs may also include requirements for the control of Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs), the control of indirect discharges to the POTW, the development and implementation of POTW Pretreatment Programs, where required, and requirements for the proper disposal or reuse of biosolids. **A wasteload allocation must be otained for each permit application.**
*May be required if the facility is new or is proposed.

- General NPDES Permits
- Individual NPDES Permits
- NPDES Discharge Monitoring
- Waste Load Allocation Form
- Stormwater Permits
- Hazardous Waste Permits
- Solid Waste Permits
- Septic Tank Seal Registration
- Underground Injection Control Permits
- Stream Disturbance Permit Guidance

Industrial Pretreatment
Regulations are found at 40 CFR 403. Similar State Regulations are found at 47 CSR 10.14. Federal, Categorical Pretreatment Standards (technology-based pretreatment standards applicable to specific industrial categories) are found at 40 CFR 405 - 40 CFR 471.

In West Virginia, POTWs greater than 5.0 MGD in design are required to develop and implement a POTW Pretreatment Program that meets the requirements of 40 CFR 403.8. The individual WV/NPDES Permit for the POTW includes requirements for the POTW to issue permits to Significant Industrial Users (SIUs) of its system, inspect and sample the contributions of SIUs, and initiate enforcement actions against noncompliant industrial users.

The Office assumes the role of pretreatment "Control Authority" for POTWs less than 5.0 MGD in design. Such POTWs must receive approval from the Office of Water Resources before accepting any new source of nondomestic wastewater. This is accomplished through the Permit Modification process. A POTW provides information on the quantity and characteristics of the

new nondomestic wastewater that they desire to accept and the Office evaluates the potential for the new discharge to cause pass through or interference. Indirect discharge limitations to prevent adverse impact are developed and the Permit Modification authorizes acceptance contingent upon compliance with the indirect discharge limitations and self-monitoring requirements.

STORMWATER PERMITS

The Stormwater Permit Team administers all stormwater related General Permits. The Stormwater Team is responsible for administrative and technical review of applications and stormwater pollution prevention plans (SWPPP's) submitted for coverage under stormwater permits.

Stormwater General Permits

1. Construction Stormwater General Permit-covers stormwater discharge from all construction activities with earth-disturbance of one acre.
2. Mulit-Sector Stormwater General Permit-covers stormwater effluent from certain industrial activities.
3. Municipal Separate Storm Sewer Systems-(MS4's) as described under Phase II of the EPA Stormwater Program. This permit covers storm water discharges from certain municipalities and other public entities such as hospitals, universities, highways and prisons.
4. Oil & Gas Costruction Stormwater General Permit-proposed State General Permit to regulat the discharge of stormwater runoff associated with oil and gas related construction activities.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

According to Federal regulations, permit coverage for stormwater discharges associated with construction activity can be obtained through individual state permits or general permits. Individual permitting involves the submittal of specific data on a single construction project to the appropriate permitting agency that will issue a site-specific NPDES permit to the project. NPDES coverage under a general permit involves the submittal of a Notice of Intent (NOI) by the regulated construction project that they intend to comply with a general permit to be developed by EPA (Federal General Permit) or a state with delegated permitting authority (State-Specific General Permit).

The NPDES program was set forth to control all direct discharges into water bodies of the United States. To date, all states (excluding Idaho, Massachusetts, New Hampshire, New Mexico, Washington, D.C., Puerto Rico and all Native American and Federally-owned properties) have been delegated the responsibility of managing the federal requirements of the NPDES program. These responsibilities currently involve all point source discharges (pipes and channels) and nonpoint sources (construction project sites).

The NPDES program requires that any site operator (on a one (1) acre or greater project) and/or building facility intending to discharge into U.S. waters obtain a permit before initiating any type of stormwater release. The Federal and all State-Specific NPDES general permits (Construction, Municipal, Industrial or Agricultural) explain the conditions as well as the effluent and/or non-effluent limitations under which an operator or building facility may release a discharge.**Currently the EPA has temporarily suspended all numeric effluent limitations and only requires a non-numeric effluent limitation for Water Quality Standards (WQS).**

Because of these guidelines found within the Federal and State-Specific NPDES permits, all federally delegated, and all non-delegated states, have passed legislation to ensure that proper awareness and compliance with all NPDES requirements within the Clean Water Act (CWA) are upheld. The directives mandate that all persons involved in land development design, review, permitting, monitoring, or inspection, or any land disturbing activity to meet the imposed education and training requirements.

FOUR DIVISIONS OF STORMWATER

Construction

As stormwater leaves a construction site, its flow can pick up and transport potential water pollutants into a Municipal Separate Storm Sewer System (MS4) or deposit directly into river, lake, or coastal water. As a mandate of the Clean Water Act, all site owners or operators whose construction projects will involve land disturbing activities on one (1) acre of land or greater and will be discharging wastewater and/or stormwater into surface waters of the U.S. are required to apply for coverage under a construction general permit.

Industrial Stormwater

Industrial stormwater pertains to industrial structures – such as manufacturing, transportation, mining, and electric power facilities – that discharge stormwater into rivers, lakes and streams from pipes, outfalls or other point sources on a the facility premises. As per the Clean Water Act and the National Pollutant Discharge Elimination System (NPDES) Permitting Program, industrial or multi-sector general permit coverage is required for any industrial facilities that discharge stormwater from their industrial areas to surface waters of the U.S, or to a Municipal Separate Storm Sewer System (MS4) that discharge to the Nation's surface waters. Other examples of industrial facilities that require a permit include scrap yards, landfills, sewage treatment plants, and hazardous waste management establishments.

Municipal Stormwater

Stormwater traveling over land will eventually drain into a conveyance system. That system is generally a Municipal Separate Storm Sewer System (MS4). An MS4 is a conveyance channel such as catch basins, curbs, gutters, pipes, tunnels, or storm drains that discharge into waters of the U.S. Any urban area that collects stormwater runoff in MS4s and discharge it to surface waters are mandated to apply for a municipal stormwater permit under the Federal Clean Water Act.

Agricultural Stormwater

Agricultural activities associated with the clearing, grading, excavation and construction of livestock feeding facilities require NPDES permit coverage. However, any stormwater discharges from the clearing, grading and excavation for the purpose of growing crops are not covered by the NPDES program as these discharges are considered to be agricultural stormwater discharges and therefore are not included in the requirements of the NPDES permitting program. The applicability of the NPDES program to the post-construction, operational phase of these facilities must also be determined according to the Federal Clean Water Act regulations for animal feeding operations and feedlots.

STORMWATER MANAGEMENT

The Clean Water Act and other relevant mandates require that all federal and state regulated construction sites, Municipal Separate Storm Sewer Systems (MS4) communities and industrial sites be covered under a National Pollutant Discharge Elimination System (NPDES) stormwater permit to have the ability to legally discharge stormwater into waters of the United States of America. Most, if not all, of the mandatory stormwater permits require that the implementation of erosion and sediment control (ESC) Best Management Practices (BMPs) are applied to curtail and minimize pollutant discharges entering surface waters, MS4s and other bodies of water such as lakes, streams, rivers and oceans.

Any construction project site, industrial facility or MS4 covered under a NPDES stormwater permit is subject to compliance inspections either from a federal organization (EPA), state entity and/or a third party inspection service. These stormwater compliance inspections consist of an on-site examination for:

- Proper National Pollutant Discharge Elimination System (NPDES) permit coverage.
- Prepared and amended a Storm Water Pollution Prevention Plan (SWPPP).
- Inadequate Storm Water Pollution Prevention Plans (SWPPPs).
- Proper installation, maintenance and replacement of erosion and sediment control devices and pollution prevention Best Management Practices (BMPs).
- Proper documentation (Notice of Intent (NOI), permit waivers, consultation letters, etc).
- Updated and amended reports (inspection reports, corrective action forms, spill reports, etc).

Failure to meet the required compliance standards can and typically result in fines. From 2008 to 2010 there has been over $20,000,000 in Clean Water Act Violations and stormwater non-compliance alone. Table 1.0 shows the civil penalties assessed from 2008 to 2010 for stormwater non-compliance:

Table 1.0 – Civil Penalties

Fiscal Year (FY)	**Estimated Pollutants to be Reduced or Treated (lbs)***	**Estimated Investments in Pollution Control ($)****	**Civil Penalties ($)*****
2008	1,300 million	$69 million	$7.7 million
2009	200 million	$59 million	$4.9 million
2010	660 million	$99 million	$7.4 million

WEST VIRGINIA STORMWATER

The state of West Virginia and the West Virginia Department of Environmental Protection's were granted delegated authority by the EPA to administer their own "State-Specific" National Pollutant Discharge Elimination System (NPDES) Permitting Program for wastewater and stormwater discharges associated with construction activity, industrial activity as well as Municipal Separate Storm Sewer System (MS4) activity. Because the EPA and The Clean Water Act (CWA) required a program for addressing the pollution caused by stormwater discharges, the West Virginia DEP instituted the Division of Waste and Water Management (DWWM) whose objective is, "to preserve, protect, and enhance the State's watersheds for the benefit and safety of all its citizens through implementation of programs controlling hazardous waste, solid waste and surface and groundwater pollution, from any source."

WEST VIRGINIA STORMWATER APPLICATION PROCESS

All owners, operators and permittees seeking coverage under the West Virginia NPDES Water Pollution Control General permit must develop and submit a Stormwater Pollution Prevention Plan (SWPPP) along with a general permit application at least 60 days prior to any ground disturbing activities to the Division of Water and Waste Management (DWWM). In addition a Groundwater Protection Plan (GPP) must also be developed and can be combined with the SWPPP and submitted as a single document. During the 60 day application review period if any application and or SWPPP requirements are found to be insufficient the applicant will be notified of such problems. Once notifications of this sort have been administered the applicant will have 30 days to make the essential changes. For application insufficiencies involving sediment and erosion controls for an active construction site the applicant will have 24 hours to make required changes.

Exceptions to standard application process

- Construction projects whose site discharge does not run into Tier 3 waters and whose land disturbing activities encompass less than 3 acres can apply for coverage under the general permit by submitting only a **Notice of Intent (NOI)** to the DWWM. In such a case the NOI form must be submitted 15 days prior to any land disturbing activities.
- Construction projects whose duration will last longer than 1 year and whose land disturbance encompasses 1 but less than 3 acres must submit a Site Registration Application (SRA) 60 days before any land disturbing activities. SRA's require an application fee that varies in amount depending on which precipitation zone a construction project is located in and the amount of acres the construction project will disturb. (A list of fee determinants and parameters is located on the West Virginia Department of Environmental Protection website).
- Construction projects whose land disturbing activities encompass fewer than 3 acres and that has site discharge that runs into waters upstream of Tier 3 waters must submit an NOI and a SWPPP to the DWWM 60 days preceding any earth disturbing activities.
- Larger construction projects estimated to disturb a land area of 100 acres or more must submit the General Permit application along with a SWPPP 100 days prior to any earth disturbing activities to the DWWM. The reason for this extended application review period is to allow enough time for the public notice procedure. Construction projects whose discharge runs into Tier 3 waters and construction projects that have a grading phase that lasts more than one cumulative year are under the same application process as projects disturbing a land area of 100 acres or more.

The submitting of NOI's, SWPPP's, SRA's, and General Permit applications is done electronically online through a mandatory ePermitting process through the WV DEP website (https://apps.dep.wv.gov/eplogin.cfm). If an applicant is unable to submit the necessary documents electronically they must apply for hard copy submittal. Upon approval of a hard copy submittal, necessary documents can be mailed to DWWM, address (*Construction/NPDES 601 57th Street, SE Charleston, WV 25304*) along with an NOI submission fee of $300 dollars.

Once an NOI and or an SRA has been submitted to the DWWM the applicant has within 24 hours to post the required construction activity sign near the entrance of the construction site. This sign must include the following

- The name and telephone number of a contact person (usually the registrant)
- A concise narrative of the construction project
- A declaration that the NOI or SWPPP are valid and have been approved by the DWWM
- The address and telephone number of where the NOI or SWPPP is kept and modified
- A statement saying that any person can obtain a copy of the NOI or SWPPP by contacting the DWWM, their telephone number is (800-654-5227)
- The sign must be at least two (2) feet by two (2) feet and be at least three (3) feet above ground level in plain sight of a public roadway or right of way.

STORM WATER POLLUTION PREVENTION PLAN REQUIREMENTS

A Storm Water Pollution Prevention Plan (SWPPP) and a Groundwater Protection Plan (GPP) must be developed for each construction site covered under the West Virginia NPDES Water Pollution Control General Permit. The GPP can be combined with the SWPPP into a single document as long as the requirements for both plans are met, but the GPP is not required to be submitted to the DWWM as a separate document for evaluation. SWPPP's must be developed using good engineering practices. SWPPP's must recognize possible sources of construction site pollutants that if discharged from the site would be anticipated to degrade the quality of Stormwater runoff. In addition, SWPPP's should outline systems put in place to reduce pollutants that may make their way into storm water discharges. The GPP must be developed following the requirements stated within 47CSR58-4.11 (Groundwater Protection Regulations) and the Code of West Virginia and Legislative Rule Title 47 Series 58 (Groundwater Protection Rule). The GPP must recognize any construction activities that could pollute ground water sources. In addition, the GPP must outline the practices implemented to protect ground water resources from the possible site sources of pollution.

The Storm Water Pollution Prevention Plan (SWPPP) is required to contain the following:

1. A description of the type and nature of the construction activity taking place, along with a schedule of relevant construction activities
2. Approximations of the area that the site encompasses and parts of the site predicted to undergo excavation or grading. The total amount of excavation by cut and fill must also be approximated
3. Calculations of the pre-construction peak discharge from a one year, 24-hour storm in cubic feet per second and post-development peak discharge from a one year, 24 hour storm in cubic feet per second must be calculated for each discharge design point.
4. Compliant site maps designating the following:
    - Drainage patterns and slopes pre-construction and expected conditions after grading activities
    - Topsoil stockpiles
    - Waste areas
    - Borrow sites
    - Locations of sediment control identified in the site description
    - Location of impervious areas after construction is complete
    - Final stormwater conveyance incorporating ditches and pipe systems
    - Property boundaries and easements
    - Nearest receiving stream, springs, surface water
    - Access roads
    - A site map legend
5. A narrative including the features of all intended construction site entrances and exits
6. A narrative of erosion and sediment controls tailored to the sites nature and needs along with an execution plan for such controls. Controls section includes:
    - A narrative of temporary and lasting erosion and sediment control vegetative practices along with an implementation timetable of such practices. Include records of when major grading events will happen. Include records of when construction activities momentarily or permanently stop on portions of the construction site. Include a timetable of when site stabilization measures will

be implemented (Site stabilization measures must be implemented as soon as possible in segments of the site where construction has momentarily or permanently ceased, must be within 7 days after construction activity has ceased.)

- A narrative of the structural practices used to eliminate sediment-laden site run-off. Examples of structural practices (check dams, earth dikes, silt fences, and pipe slope drains)
- Any use of treatment chemicals including but not limited to polymers and flocculants, must be documented with the specifications of the chemical treatment.

7. A narrative of waste the site will create/store and a disposal plan that is in accordance with the Code of West Virginia and Legislative Rule Title 33 Series 1, (Solid Waste Management Rule)
8. Preventative maintenance procedures: a preventative maintenance program includes inspection and maintenance of sediment and erosion control best management practices (BMP's) in order to identify possible sources of BMP failure
9. Detailed records of the quality and quantity of construction site storm water discharges
10. Site maintenance records of when sediment and erosion controls are in need of repair and when they are repaired
11. Detailed records of all site inspections. Erosion and Sediment control measures and other protective devices included in the site plan must be inspected every 7 calendar days or 24 hours after a rain event
12. Spill prevention and response procedures: this section includes areas where spills are most likely to happen and where those areas discharge drains into, detailed material handling procedures and storage requirements, spill clean-up procedures and locations of spill kits.
13. Detailed records of construction site incidents, like chemical spills, and internal reporting procedures tailored to such incidents
14. Good Housekeeping measures that require diligent maintenance of the site to ensure a clean and organized project site
15. Employee training programs must be implemented to educate those involved how to adhere to the goals of the SWPPP, proper good housekeeping, spill response procedures, and conducting routine inspections. Records of training must be maintained within the SWPPP

Note: The permittee must modify the SWPPP whenever a change in design, construction, scope of operation, and maintenance occurs that has the potential to pollute stormwater discharge and/or negatively affect site drainage patterns. Upon a field inspection by the Director or a director representative, if any facets of the site are deemed insufficient changes to the SWPPP maybe requested.

Note: Projects in areas that have local government requirements that differ from WV state requirements must adhere to required criteria. Compliance with the General Permit does not ensure compliance with local government criteria.

All SWPPP's and GPP's under the WV General National Pollutant Discharge Elimination System Water Pollution Control Permit are deemed reports that must be accessible for review by

the public under Section 308(b) of the Clean Water Act (CWA).

GROUNDWATER PROTECTION PLANS

Groundwater Protection Plans (GPPs) are required for all facilities having the potential to impact groundwater. They are "preventive maintenance" documents that cover all processes and materials at a facility that "may reasonably be expected" to have an effect on groundwater quality. The facility must make an inventory of all potentially contaminating processes and materials, and have structures and practices in place to prevent groundwater contamination from these processes and materials. Groundwater protection practices include, at a minimum, quarterly inspections and maintenance by facility personnel and usually include spill cleanup procedures. Regulations for how to prepare and implement a GPP are found in 47CSR58.

ABOVE GROUND STORAGE TANKS

The DEP filed the 47 CSR 62 Interpretive Rule with the Secretary of State on October 21st, which became effective on November 20th. This rule details the requirements for submitting the initial Inspection Certifications as required by the Aboveground Storage Tank Act. The certifications for each tank are due by January 1, 2014.

How to Complete an Inspection Certification

You can only submit inspection certifications for tank registrations that have been accepted by WVDEP. If you have pending or unsubmitted tank registrations, finish them as soon as possible so that you can complete your inspection certifications for those tanks.

There are two different certification forms, and one must be completed for each tank. One form deems a tank Fit for Service and the other deems a tank Not Fit for Service. Any deficiencies found during an inspection of a tank must be documented and submitted along with the certification form. Below are links to the two prescribed inspection certification forms:

- Fit for Service
- Not fit for Service

You can add inspection certifications for your tank(s) by clicking the Add button beside either "Fit for Service" or "Not fit for Service" from the Section List screen in ESS. Additional, specific instructions are provided in red at the top of each computer screen as you work through entering your information. You must Section Complete all sections and hit the Submit Application button in order for WVDEP to receive your inspection certification information.

Below are the tank levels and their respective inspection certification requirements. For more information, click here to see the entire 47 CSR 62 Interpretive Rule which outlines the requirements in more detail. You can also visit the WVDEP Aboveground Storage Tank webpage regarding inspection certifications for more information. Your registration confirmation email from WVDEP and the information you provided in your registration is all you need to determine the level of your tank(s).

Level 1 Tanks

A tank is considered a Level 1 Tank if it meets any of the following conditions:

- In a Zone of Critical Concern (ZCC)
- In a Source Water Protection Area (SWPA)
- Has a capacity of 50,000 gallons or more
- Contains a substance defined in section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as a "hazardous substance."

But does not meet the following conditions:

- Contains any of the following substances:
- Potable water
- Filtered or unfiltered surface water or groundwater (excluding flowback water from oil and gas wells)
- Demineralized water
- Noncontact cooling water
- Water stored for fire or emergency purposes
- Food or food-grade materials (e.g. milk, maple syrup, etc.)
- Is an empty mobile tank

- Is a hazardous waste tank subject to regulation under 40 C.F.R. §§ 264 and 265 (except those subject to regulations under 40 C.F.R §§ 265.201)

Inspection Certification Requirements of a Level 1 Tank
The inspection must be performed by one of the following individuals:

- A professional engineer registered with the WV State Board for Professional Engineers or a qualified person working under their direct supervision
- An individual certified to perform tank inspection by the American Petroleum Institute (API)
- An individual certified to perform tank inspection by the Steel Tank Institute (STI)

The appropriate person, as described above, must complete and sign a certification that the tank was inspected, is either Fit for Service or Not Fit for Service, and provide documentation of deficiencies.

Level 2 & 3 Tanks
A tank is considered a Level 2 Tank if it does not meet the requirements of a Level 1 Tank or a Level 3 Tank.

A tank is considered a Level 3 Tank if it meets any of the following conditions:

- Contains any of the following substances:
    - Potable water
    - Filtered or unfiltered surface water or groundwater (excluding flowback water from oil and gas wells)
    - Demineralized water
    - Noncontact cooling water
    - Water stored for fire or emergency purposes
    - Food or food-grade materials (e.g. milk, maple syrup, etc.)
- Is an empty mobile tank
- Is a hazardous waste tank subject to regulation under 40 C.F.R. §§ 264 and 265 (except those subject to regulations under 40 C.F.R §§ 265.201)

Inspection Certification Requirements of Level 2 and Level 3 Tanks
The inspection may be performed by any of the following individuals:

- A professional engineer registered with the WV State Board for Professional Engineers or a qualified person working under their direct supervision.
- An individual certified to perform tank inspection by the American Petroleum Institute (API).
- An individual certified to perform tank inspection by the Steel Tank Institute (STI).
- The owner of the tank or an individual knowledgeable about tanks in their employ or contracted by the owner.
- The operator of the tank or an individual knowledgeable about tanks in their employ or contracted by the operator.

The individual must complete an inspection certification form for each tank that deems it either Fit for Service or Not Fit for Service. The individual must also attach a list of any deficiencies found during inspection.

- If the inspection is completed by the owner, operator, or an individual knowledgeable about tanks in the employ or under contract of the owner or operator, the owner or operator must be the one to sign the inspection certification.

- If the inspection is completed by a professional engineer registered with the WV State Board for Professional Engineers or a qualified person working under their direct supervision, the Professional Engineer must be the one to sign the inspection certification.
- If the inspection is completed by an individual certified to perform tank inspection by the American Petroleum Institute (API) or the Steel Tank Institute (STI), he or she must be the one to sign the inspection certification.

SPILL PLAN OR SPILL PLAN CERTIFICATION

The DEP filed the 47 CSR 62 Interpretive Rule with the Secretary of State on October 21st, which became effective on November 20th. This rule details the requirements for submitting the initial Spill Prevention Response Plans as required by the Aboveground Storage Tank Act. The plans/certifications for each tank are due by December 3, 2014.

How to Access the Spill Plan or Spill Plan Certification Website
You can submit the appropriate spill plan or spill plan certification for your tank(s) by going to WVDEP Electronic Submission System (ESS) website, and uploading the file(s) or completing the certification form.

How to Complete a Spill Plan or Spill Plan Certification
You can only submit spill plans and spill plan certifications for tank registrations that have been accepted by WVDEP. If you have pending or unsubmitted tank registrations, finish them as soon as possible so that you can complete your spill plan and/or spill plan certifications for those tanks.

You can add spill plans and/or spill plan certifications for your tank(s) by clicking the Add button beside the appropriate tank level(s) from the Section List screen. Additional, specific instructions for each tank level are provided in red at the top of each computer screen, as you work through entering your information. You must Section Complete all sections and hit the Submit Application button in order for WVDEP to receive your spill plan information.

Below are the tank levels and their respective spill plan requirements. For more information, click here to see the entire 47CSR62 Interpretive Rule which outlines the requirements in more detail. Your registration confirmation email from WVDEP and the information you provided in your registration is all you need to determine the level of your tank(s).

Level 1 Tanks
A tank is considered a Level 1 Tank if it meets any of the following conditions:

- In a Zone of Critical Concern (ZCC)
- In a Source Water Protection Area (SWPA)
- Has a capacity of 50,000 gallons or more
- Contains a substance defined in section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as a "hazardous substance".

But does not meet the following conditions:

- Contains any of the following substances:
  - Potable water
  - Filtered or unfiltered surface water or groundwater (excluding flowback water from oil and gas wells)
  - Demineralized water
  - Noncontact cooling water
  - Water stored for fire or emergency purposes
  - Food or food-grade materials (e.g. milk, maple syrup, etc.)
  - Is an empty mobile tank
  - Is a hazardous waste tank subject to regulation under 40 C.F.R. §§ 264 and 265 (except those subject to regulations under 40 C.F.R §§ 265.201)

Spill Plan Requirements of a Level 1 Tank
You must submit a Spill Prevention Response Plan (SPRP) for all Level 1 Tanks.

Level 2 Tanks
A tank is considered a Level 2 Tank if it does not meet the requirements of a Level 1 Tank or a Level 3 Tank.

Spill Plan Requirements of a Level 2 Tank
Any of the following spill plans can be submitted for a Level 2 Tank:

- Groundwater Protection Plan (GPP)
- Well Site Safety Plan (WSSP)
- Spill Prevention Plan pursuant to 35CSR1
- Spill Prevention, Control, and Countermeasures Plan (SPCC)
- Spill Prevention Response Plan (SPRP)

Or, you can certify any of the plans below if it has already been provided to DEP as part of a separate permit requirement. You must provide the permit number(s) associated with the plan in order to submit the certification.

- Groundwater Protection Plan (GPP)
- Well Site Safety Plan (WSSP)

Level 3 Tanks
A tank is considered a Level 3 Tank if it meets any of the following conditions:

- Contains any of the following substances:
    - Potable water
    - Filtered or unfiltered surface water or groundwater (excluding flowback water from oil and gas wells)
    - Demineralized water
    - Noncontact cooling water
    - Water stored for fire or emergency purposes
    - Food or food-grade materials (e.g. milk, maple syrup, etc.)
- Is an empty mobile tank
- Is a hazardous waste tank subject to regulation under 40 C.F.R. §§ 264 and 265 (except those subject to regulations under 40 C.F.R §§ 265.201)

Spill Plan Requirements of a Level 3 Tank
Any of the following spill plans can be submitted for a Level 3 Tank:

- Groundwater Protection Plan (GPP)
- Well Site Safety Plan (WSSP)
- Spill Prevention Response Plan (SPRP)

Or, you can certify any of the plans below if it has already been provided to DEP as part of a separate permit requirement. You must provide the permit number(s) associated with the plan in order to submit the certification.

- Groundwater Protection Plan (GPP)
- Well Site Safety Plan (WSSP)

Or, you can certify an Emergency Response Plan (ERP) pursuant to the Bioterrorism Act of 2002 if the plan was previously submitted to the EPA. You do not need to provide DEP with this plan.
Please review the information and determine the level(s) of your tank(s).

WATER USE SECTION

In 2004, the West Virginia legislature passed the Water Resources Protection Act. The purpose of the act was to gather information on the quantity and use of state surface and groundwater resources. In 2008, the act was amended and renamed the Water Resources Protection and Management Act. The amended act required the development of a water resources management plan for the state by 2013. A Water Resources Management Plan for the State was adopted in March of 2014 and can be downloaded from WV WaterPlan. Progress reports to the Joint Legislative Oversight Commission on State Water Resources are required each November.

Water Withdrawal Guidance Tool
WVDEP has developed guidance and a tool to help individuals know when it is environmentally safe to withdraw water from a stream. The guidance is based on percentages of mean annual flow, based on a 10-year period that afford an appropriate flow to protect the aquatic habitat.

Large Quantity User (LQU)
If you are a **large quantity user, and are required to complete an annual user certification.**

For purposes of reporting your 2014 water use, the rules have not changed. According to the Water Resources Protection and Management Act, prior to changes made by Senate Bill 373, a Large Quantity Water User (LQU) withdrawing more than 750,000 gallons in a month is required to certify that their facility's total annual water usage has not changed by more than ten percent of their historic baseline average reported on the DEP notification letter of January 2015
.
If your total water withdrawals for the year of 2014 are within the reported ±10% threshold, download, print, fill in the blanks, sign and return this LQU Certification Sheet. If your 2014 water use falls outside the range, please download, fill out and sign a New Registration Form. All forms are to be returned to the WVDEP no later than **March 31, 2015**. If your facility does not meet this requirement, please contact the Water Use Section to be removed from our mailing list.

EMERGENCY RESPONSE PLANS

Security practices should be incorporated into a utility's every day business functions. Activities such as fence cutting and lock picking, often dismissed as harmless, may be indications of more serious threats to a water or wastewater system. Utilities must be prepared to respond to this type of threat, as well as a wide range of other emergencies, including natural disasters. Improved security preparations provide for a more effective and efficient response.

Water and wastewater utilities are responsible for taking action to protect their infrastructure. The federal government and EPA are helping utilities to accomplish these actions by providing tools, trainings, and technical assistance.

Several resources designed specifically to help small drinking water and wastewater utilities better protect their systems are available through this site.

BIOTERRORISM ACT - On June 12, 2002, President Bush signed into law the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL 107-188, referred to as the Bioterrorism Act). In the Bioterrorism Act, Congress recognizes the need for drinking water systems to undertake a more comprehensive view of water safety and security. The Act amends the SDWA and specifies actions CWSs and the EPA must take to improve the security of the Nation's drinking water infrastructure.

The Bioterrorism Act defines small community drinking water systems as those serving a population of more than 3,300 but less than 50,000. If a community drinking water system serves more than 3,300 people, that utility must:

- Conduct a vulnerability assessment
- Certify to EPA that the assessment has been completed
- Send a copy of the assessment results to EPA
- Certify that the system has an emergency response plan.

VULNERABILITY ASSESSMENTS - Vulnerability assessments help water systems evaluate susceptibility to potential threats and identify corrective actions that can reduce or mitigate the risk of serious consequences from adversarial actions (e.g., vandalism, insider sabotage, terrorist attack, etc.). Such an assessment for a water system takes into account the vulnerability of the water supply (both ground and surface water), transmission, treatment, and distribution systems. It also considers risks posed to the surrounding community related to attacks on the water system. An effective vulnerability assessment serves as a guide to the water utility by providing a prioritized plan for security upgrades, modifications of operational procedures, and/or policy changes to mitigate the risks and vulnerabilities to the utility’s critical assets. The vulnerability assessment provides a framework for developing risk reduction options and associated costs. Water systems should review their vulnerability assessments periodically to account for changing threats or additions to the system to ensure that security objectives are being met. Preferably, a vulnerability assessment is "performance-based,” meaning that it evaluates the risk to the water system based on the effectiveness (performance) of existing and planned measures to counteract adversarial actions.

The following are common elements of vulnerability assessments. These elements are conceptual in nature and not intended to serve as a detailed methodology:

1. Characterization of the water system, including its mission and objectives;
2. Identification and prioritization of adverse consequences to avoid;
3. Determination of critical assets that might be subject to malevolent acts that could result in undesired consequences;
4. Assessment of the likelihood (qualitative probability) of such malevolent acts from adversaries;
5. Evaluation of existing countermeasures; and
6. Analysis of current risk and development of a prioritized plan for risk reduction.

The vulnerability assessment process will range in complexity based on the design and operation of the water system itself. The nature and extent of the vulnerability assessment will differ among systems based on a number of factors, including system size, potential population affected, source water, treatment complexity, system infrastructure and other factors. Security and safety evaluations also vary based on knowledge and types of threats, available security technologies, and applicable local, state and federal regulations.

EMERGENCY RESPONSE PLANS - An **Emergency Response Plan (ERP)** is a documented plan that describes the actions that a CWS would take in response to various major events. A major event refers to:

- Credible threats, indications of terrorism, or acts of terrorism;
- Major disasters or emergencies such as hurricanes, tornadoes, storms, earthquakes, fires, flood, or explosion regardless of cause; and
- Catastrophic incidents that leave extraordinary levels of mass casualties, damage, and disruption severely affecting the population, infrastructure, environment, economy, and government functions.

Protecting public health is the primary goal of community drinking water systems, and having an up-to-date and workable ERP helps achieve this goal in any crisis situation. The Bioterrorism Act amends the SDWA by adding, among other requirements, section 1433. Section 1433(b) requires community water systems serving populations greater than 3,300 to either prepare or revise an ERP that incorporates the results of its Vulnerability Assessment (VA). The ERP must include "plans, procedures, and identification of equipment that can be implemented or utilized in the event of a terrorist or other intentional attack" on the CWS. The ERP also must include "actions, procedures, and identification of equipment which can obviate or significantly lessen the impact of terrorist attacks or other intentional actions on the public health and the safety and supply of drinking water provided to communities and individuals."

Core elements form the basis, or foundation, for responding to any major event. EPA has identified 8 core elements common to an ERP that you should plan to utilize or bring to bear during water emergencies:

1. System Specific Information;
2. CWS Roles and Responsibilities;
3. Communication Procedures: Who, What, and When;
4. Personnel Safety;
5. Identification of Alternate Water Sources;
6. Replacement Equipment and Chemical Supplies;

7. Property Protection; and
8. Water Sampling and Monitoring

Your ERP may contain sensitive information, so you should consider steps you need to take to ensure the security of your ERP. Sensitive information should be placed in appendices, or in sections that are not readily available to unauthorized personnel. The ERP, however, should be easily accessible to authorized personnel and should be easily identifiable during a major event. Steps taken to limit access by unauthorized persons should consider local and state **Freedom of Information Act (FOIA)** laws. Alternatively, you can opt to make your ERP general in nature so that everyone can use it and not include specific information about system vulnerabilities. A secure copy of your ERP should be maintained in an off-premises location in the event that your primary copy cannot be accessed.

CONTINGENCY PLANNING

Contingency planning is an essential facet of utility management and one that is often overlooked. Although utilities in various locations will be vulnerable to somewhat different kinds of natural disasters, the effects of these disasters in many cases will be quite similar. As a first step toward an effective contingency plan, each utility should make an assessment of its own vulnerability and then develop and implement a compressive plan of action.

RISK MANAGEMENT PLAN RULE

The **Risk Management Plan (RMP) Rule** implements Section 112(r) of the 1990 Clean Air Act amendments. RMP requires facilities that use extremely hazardous substances to develop a Risk Management Plan. These plans must be revised and resubmitted to EPA every five years.

Section 112(r) of the Clean Air Act Amendments requires EPA to publish regulations and guidance for chemical accident prevention at facilities that use extremely hazardous substances. These regulations and guidance are contained in the RMP rule.

The information required from facilities under RMP helps local fire, police, and emergency response personnel prepare for and respond to chemical emergencies. Making RMPs available to the public also fosters communication and awareness to improve accident prevention and emergency response practices at the local level. The RMP rule was built upon existing industry codes and standards. It requires companies that use certain flammable and toxic substance to develop a Risk Management Program.

Who must submit an RMP?
Owners or operators of stationary source holding more than a threshold quantity of a regulated substance in a process are required to comply with EPA's Risk Management Program regulations. The regulations require owners or operators of covered facilities to implement a risk management program and to submit an RMP to EPA.

- 2500 pounds of chlorine

What information must an RMP include?
Each facility's program should address three areas:

- Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases;
- Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and
- Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

How often must facilities submit an RMP?
The plans are revised and resubmitted to EPA every five years.

What chemicals are must be reported under RMP?
The rule includes a List of Regulated Substances under section 112(r) of the Clean Air Act, including their synonyms and threshold quantities (in pounds) to help assess if a process is subject to the RMP rule or the general duty clause. Where the Clean Air Act Section 112(r) program has been delegated to a state, that state may have additional requirements for the federally listed chemicals, and/or additional listed chemicals.

EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW ACT

Authorized by Title III of the **Superfund Amendments and Reauthorization Act (SARA**), the **Emergency Planning & Community Right-to-Know Act (EPCRA)** was enacted by Congress as the national legislation on community safety. This law is designed to help local communities protect public health, safety, and the environment from chemical hazards.

To implement EPCRA, Congress requires each state to appoint a State Emergency Response Commission (SERC). The SERCs are required to divide their states into Emergency Planning Districts and to name a Local Emergency Planning Committee (LEPC) for each district.

Broad representation by fire fighters, health officials, government and media representatives, community groups, industrial facilities, and emergency managers ensures that all necessary elements of the planning process are represented.

EPCRA Reporting Requirements

EPCRA does not place limits on which chemicals can be stored, used, released, disposed, or transferred at a facility. It only requires a facility to document, notify, and report information. Each section of the law, however, applies different requirements, has different deadlines and covers a different group of chemicals.

Emergency Planning (Sections 301-303)

These sections are to ensure that state and local communities are prepared to respond to potential chemical accidents. As a first step, each state had to establish a **State Emergency Response Commission (SERC)**. In turn, the SERC designated local emergency planning districts. For each district, the SERC appoints, supervises and coordinates the activities of a **Local Emergency Planning Committee (LEPC).** The LEPC must, in turn, develop an emergency response plan for its district and review it annually. The membership of the LEPC includes representatives of public and private organizations as well as a representative from every facility subject to EPCRA emergency planning requirements.

The plan developed by the LEPC must:

- identify affected facilities and transportation routes;
- describe emergency notification and response procedures;
- designate community and facility emergency coordinators;
- describe methods to determine the occurrence and extent of a release;
- identify available response equipment and personnel;
- outline evacuation plans;
- describe training and practice programs and schedules; and
- contain methods and schedules for exercising the plan.

Determining if a facility is subject to the EPCRA emergency planning requirements is straightforward. The Environmental Protection Agency (EPA) has published a list of "extremely hazardous substances (EHS)." For each EHS, the list includes the name, the Chemical Abstract Service number of the substance, and a number called a threshold planning quantity (TPQ). The TPQ, expressed in pounds, is the critical number. If a facility has within its boundaries an amount of an extremely hazardous substance equal to or in excess of its threshold planning quantity, the facility is subject to the EPCRA emergency planning requirements and must notify both the SERC and the LEPC of this fact. The facility must also appoint an emergency response

coordinator who will work with the LEPC on developing and implementing the local emergency plan at the facility.

Emergency Release Notification

A facility may be subject to these reporting requirements even if it is not subject to the provisions of Sections 301-303. This section applies to any facility which stores, produces or uses a "hazardous chemical" (any chemical which is a physical hazard or a health hazard) and releases a reportable quantity (RQ) of a substance contained in either of the following two tables published by the EPA in the Code of Federal Regulations:

- list of extremely hazardous substances; and
- list of CERCLA hazardous substances

The RQ is the critical number that determines if a release must be reported. This is a number expressed in pounds that is assigned to each chemical in the above-mentioned tables. If the amount of a chemical released to the environment exceeds the reportable quantity, the facility must immediately report the release to the appropriate LEPC and SERC and provide a written follow-up as soon as practicable.

Of course there are exceptions. A release which results in exposure to persons solely within the facility boundary or is a federally permitted release does not have to be reported. Also, continuous pesticide and radionuclide releases meeting specified conditions are exempt.

Emergency Training and Review of Emergency Systems

Authorization to provide training and education programs for Federal, State, and local personnel in hazard mitigation; review of emergency systems for monitoring, detecting and preventing releases of extremely hazardous substances. Compile reports on status of technological capabilities, public emergency alert devises or systems, technical and economic feasibility of establishing, maintaining, and operating perimeter alert systems , make recommendations on improving devices/systems or new and improved technologies.

Community Right-to-Know Reporting Requirements

The purpose of these requirements is to increase community awareness of chemical hazards and to facilitate emergency planning. This section applies to any facility that is required by the Occupational Safety and Health Administration (OSHA) under its Hazard Communication Standard to prepare or have available a Material Safety Data Sheet (MSDS) for a hazardous chemical (See II above for definition) or that has on-site, for any one day in a calendar year, an amount of a hazardous chemical equal to or greater than the following threshold limits established by the EPA:

- 10,000 pounds for hazardous chemicals; or
- lesser of 500 pounds or the threshold planning quantity (TPQ) for extremely hazardous substances (Chlorine)

If a facility is subject to reporting under these sections, it must submit information to the SERC, the LEPC and the local fire department with jurisdiction over the facility under two categories: MSDS reporting and inventory reporting.

Toxic Chemical Release Inventory Reporting

The data gathered will assist in research and development of regulations, guidelines, and standards. Under this section, The EPA is required to establish the Toxics Release Inventory (TRI), an inventory of routine toxic chemical emissions from certain facilities. The original data

requirements for the TRI, specified in SARA Title III, have been greatly expanded by the Pollution Prevention Act of 1990. The TRI must now also include information on source reduction, recycling and treatment.

To obtain this data, EPCRA requires each affected facility to submit a Toxic Chemical Release Inventory Form (Form R) to the EPA and designated state officials each year on July 1. A facility must file a Form R if it:

- has 10 or more full-time employees;
- is in a specified Standard Industrial Classification Code; and
- manufactures more than 25,000 lb/year of a listed toxic chemical; or
- processes more than 25,000 lb/year of a listed toxic chemical; or
- otherwise uses more than 10,000 lb/year of a listed toxic chemical; or
- manufactures, processes or otherwise uses a listed persistent bioaccumaltive toxic (PBT) chemical above the respective PBT's reporting threshold. PBT reporting thresholds can vary anywhere from 0.1 grams for dioxin compounds to 100 pounds for lead.

On October 29, 1999, EPA published a final rule (64 FR 58666) adding certain chemicals and chemical categories to the EPCRA section 313 list of toxic chemicals and lowering the reporting threshold for persistent bioaccumulative toxic (PBT) chemicals. On January 17, 2001 EPA published a final rule (66 FR 4500) that classified lead and lead compounds as PBT chemicals and lowered their reporting thresholds.

In December 2006, the EPA finalized a new TRI Rule which expands eligibility for use of the Form A Certification Statement in lieu of the more detailed Form R. Details about this final rule can be found on the EPA website under TRI Reporting.

WEST VIRGINIA DIVISION OF HOMELAND SECURITY AND EMERGENCY MANAGEMENT

The mission of the West Virginia Division of Homeland Security and Emergency Management is to ensure the protection of life and property by providing coordination, guidance, support and assistance to local emergency managers and first responders.

Pursuant to West Virginia State Code and the West Virginia Emergency Operations Plan, the agency manages disaster preparedness, mitigation, and response and recovery efforts throughout the state by coordinating with all responsible government agencies. In the event of a federally declared disaster, the Federal Emergency Management Agency (FEMA) works closely with the division to administer assistance programs.

The division contains a few key branches that work seamlessly together to achieve DHSEM's overall mission, including: Mitigation and Recovery, Planning and Response, and Homeland Security. In addition to these branches, which function throughout the entire year, and the emergency call center, which is staffed 24/7, the division activates and operates the state's Emergency Operations Center when local governments request state emergency assistance. During activation, DHSEM coordinates materials and support requested by local emergency service providers, who then administer direct assistance to citizens. When necessary, the Mobile Operations Center is activated so that key personnel can manage these tasks from the scene of an incident.

The West Virginia Division of Homeland Security and Emergency Management is made up of approximately 50 full-time employees, all of whom work within one of the division's key branches.

- The Mitigation and Recovery branch is comprised of three groups who deal with either: floodplain management, hazard mitigation or individual assistance.
- The Planning Branch is responsible for the Flood Warning System, the Emergency Operations Center and the Watch Center, as well as the SARA Title III Program, Search and Rescue Program, the GIS section and any other necessary planning.
- The Preparedness and Response branch is made up of the REP Program, Regional Response Teams, Communications, the State Emergency Operations Center, Watch Center, Integrated Flood Warning System, and Training.
- The Administrative Branch is responsible for accounts payable, accounts receivable, grant managment, human resources, budgeting, asset management, and financial auditing.
- The SERC/Tier II/Tech Hazards is responsible for the Tier II Program, Toxic Release Inventory Program, and administration of the State Emergency Response Commission.

WEST VIRGINIA STATE EMERGENCY RESPONSE COMMISSION

The mission of the **State Emergency Response Commission (SERC**) and **Local Emergency Planning Committees (LEPCs)** is to implement the **Emergency Planning and Community Right to Know Act (EPCRA)** and to mitigate the effects of a release or spill of natural or man-made hazardous materials through developing response plans, including Preparedness, Notification and Warning, and Public Protective Measures. On October 17, 1986, in response to concerns for safety around chemical facilities, Congress enacted the EPCRA, also known as Title III of the **Superfund Amendments and Reauthorization Act (SAR**A). The Act has had a far-reaching influence on issues relating to hazardous materials.

About Tier II mandatory reporting
As of Reporting Year 2014, all West Virginia Tier II reports must be submitted electronically using the U.S. Environmental Protection Agency's Tier2Submit file format. This software can be downloaded here. The files can be submitted by email, CD or diskette.

If mailing a CD or diskette, you must include a sheet of paper with a contact name and phone number, in case of problems. If you can't file electronically because of an inadequate Internet connection and/or computer, you can report by paper.

Please check with your individual LEPC and/or fire department about possible different deadlines or reporting thresholds.

Defining a reportable chemical
If the U.S Occupational Safety and Health Administration (OSHA) requires your company to keep a Safety Data Sheet (SDS, formerly Material Safety Data Sheet, or MSDS) on file for any chemicals stored or used in the workplace, and the chemical(s) is stored in quantities equal to or greater than the Threshold Planning Quantity (TPQ) for that chemical, then you must report it.

The TPQ for these chemicals is either:
- 500 pounds or the TPQ listed (whichever is lower) for the 356 chemicals listed under Section 302, also known as Extremely Hazardous Substances (EHS); or
- 10,000 pounds for any other chemical.

Section 302 EHSs:
- EPA tools.
- Extremely Hazardous Substance List by Chemical Name.
- Extremely Hazardous Substance List by Chemical Abstract Service Number.

Exception: In 1999, EPA excluded gasoline held at most retail gas stations from EPCRA 311/312 reporting for gasoline and/or diesel, if stored in underground tanks. This exemption doesn't apply to fuel mixtures containing more than 10 percent ethanol.

Motor oil, antifreeze and diesel meet the OSHA definition of a "hazardous chemical."

Contrary to what some oil companies are listing on MSDS sheets, OSHA considers motor oil a hazardous chemical. This 1997 letter on the OSHA website was written in response to a memorandum stating that antifreeze, oil products and diesel weren't hazardous.

Where to send your report
You must mail or email completed forms (and any optional CDs/diskettes) to the following three places:

- West Virginia State Emergency Response Commission (WVSERC)
- County LEPC (Local Emergency Planning Committee)
- Responding Fire Departments

What form to use
We require the use of Tier2Submit software or the federal Tier II form (revised for RY2013), and follow the standard federal filing dates and reporting thresholds.

- Because some LEPCs have added requirements, different thresholds or filing dates, or their own forms, each LEPC should be contacted for additional filing requirements.
- Our instructions (be sure to follow them exactly) are at "Electronic reporting using Tier2Submit software."
- Please be sure to include the company name in the “Facility Name” field, as well as a mailing address for each facility.
- You must use the Tier2Submit software to file with us. This is mandatory unless you’re unable to comply because of an inadequate Internet connection and/or computer. See "Electronic reporting using Tier2Submit software" for details.
- If you use the federal Tier II form or its equivalent, you must submit it to us as a hard copy (printed paper). Don’t email scanned or PDF forms.

Reporting frequency
Unless a new chemical exceeds a TPQ (requiring a Tier II report within 90 days), this is an annual report, due March 1, and covers the activity of the previous calendar year (i.e., calendar year 2014 reporting is due March 1, 2015).

Hazardous chemical storage reporting requirements
Under OSHA regulations, employers must maintain a Safety Data Sheet (SDS) or a Material Safety Data Sheet (MSDS) for any hazardous chemicals stored or used in the workplace. Approximately 500,000 products have SDSs/MSDSs.

Section 311 requires facilities that have chemicals that require MSDSs, and that store more than the Emergency Planning and Community Right-to-Know Act (EPCRA) Threshold Planning Quantity (TPQ) for any of these chemicals, to submit a list of the chemicals, or copies of their SDSs/MSDSs to the State Emergency Response Commission (SERC), Local Emergency Planning Committee and local fire department.

In West Virginia, the SERC is the West Virginia State Emergency Response Commission (WVSERC).

Under the commission’s authority, our SARA (Superfund Amendments and Reauthorization Act) Program receives and manages state-level EPCRA reports. The Section 311 requirement is now met by submitting a Tier II Emergency and Hazardous Chemical Inventory Form for the applicable chemicals within 90 days of exceeding the threshold for that chemical.

Under Section 312, facilities covered by Section 311 must submit the Tier II form annually for all chemicals exceeding the reporting threshold in the previous calendar year to the LEPC, our SARA Program and the local fire department.

This final rule requires Tier II facilities to:

- Report latitude and longitude.
- Report the Toxic Inventory Reduction (TRI) facility identification number (TRIFID) assigned to the facility, if subject to TRI reporting.
- Report whether subject to Clean Air Act (CAA) section 112(r), also known as the Risk Management Program (RMP).
- Report whether subject to EPCRA section 302 (has an Extremely Hazardous Substance, or EHS, above reporting threshold).
- Report whether the location where the hazardous chemicals are stored is manned or unmanned.
- Report the maximum number of occupants that may be present at the facility at any one time.
- Report contact information for the facility emergency coordinator.
- Report Tier II contact information.
- Report the email addresses of the owner or operator and emergency contact(s),
- Provide a description for the storage types and conditions.

Facilities can choose to voluntarily report hazardous chemicals below the reporting thresholds.

- Threshold Planning Quantities (TPQs) for those Extremely Hazardous Substances (EHSs) that are non-reactive solid chemicals in solution.
- Revised Range Codes for reporting chemical inventories.
- Revised Occupational Safety and Health Administration Hazard Communication Standards (HCS) and Material Safety Data Sheets (MSDSs) Format.
    - EPA fact sheet.

Tier II forms require the following information for each substance:

- The chemical name or the common name as indicated on the Safety Data Sheets (SDSs) or Material Safety Data Sheets (MSDSs).
- An estimate (in ranges) of the maximum amount of the chemical present at any time during the preceding calendar year and the average daily amount.
- A brief description of the hazards and manner of storage of the chemical.
- The location of the chemical at the facility.
- Indication of whether the owner elects to withhold location information from disclosure to the public.

We use the federal Tier II form (revised for RY2013), and follow the federal standard filing dates and filing thresholds. Because some LEPCs/fire departments have added requirements, different thresholds, different filing dates, or their own forms, each LEPC should be contacted about filing requirements.

You must submit Section 312 information on or before March 1 each year. The information submitted under sections 311 and 312 is available to the public from our SARA Program on a facility-by-facility basis. EPA estimates that about 550,000 facilities are now covered by EPCRA 311/312 requirements.

Who must report under sections 311/312

If the company is required by OSHA to keep any SDSs/MSDSs on file for hazardous chemicals stored or used in the workplace, and one or more of the chemicals is stored in quantities equal to or greater than the Threshold Planning Quantity (TPQ) for that chemical, then you must file a Tier II form for every year that any of the chemicals exceed the TPQ.

The TPQ for these chemicals is:

- 500 pounds or the TPQ listed (whichever is lower) for the 356 chemicals listed under Section 302, also known as Extremely Hazardous Substances (EHS).
- 10,000 pounds for any other chemical.

Finding your NAICS code

Both Tier2Submit and the Tier II Form now ask for the primary North American Industry Classification System (NAICS) code for your facility. For more information on NAICS codes and a NAICS search tool, see the U.S. Census Bureau's Introduction to NAICS.

More instructions and reminders

- Reporting ranges are for pounds, and not gallons, cubic feet, etc. Please convert all volume measurements (gallons, cubic feet, etc.) into pounds.
- For annual reporting, the Tier II report must not be filed before Jan. 1, as the report must contain actual quantities, not projected quantities.
- If a new chemical exceeds a Threshold Planning Quantity (TPQ) or if significant new information is determined about the chemicals at a facility, a Tier II report should be submitted to the three places listed above in the "Where to send your reports" section within 90 days. If a Tier I report is filed instead of a Tier II report, we'll request a Tier II form.
- Be sure to check with your Local Emergency Planning Committee (LEPC) for information concerning potential differences in deadlines, forms or reporting thresholds

MAINTAINING RECORDS & REPORTS

It is important that water system personnel maintain various reports and records for planning and proper management of the system operation. It is equally important to know the significance of each report and record because the operator is responsible for them. Technical reports and records are generally viewed as those dealing with the physical operation and maintenance of the water system's facilities. These reports, like financial reports, can be valuable tools for good decision-making and good day-to-day management, and can be used as a gauge to help determine the financial integrity and condition of the system.

Good records also allow operators to react to potential problems and plan for future expansion. Accurate historical data allows Board Members to make more informed decisions regarding projections for system improvements. This data can also be an invaluable asset in helping to recognize areas of preventative action. The following reports or records should be used by systems:

Daily Operating Report
This report lists such things as the amount of water purchased or produced, meter readings, and the amount of chemicals used in the treatment process. The report is completed on a daily basis. It is advisable to maintain these records in the files for ten years.

Water Loss Report
The term "water loss' is generally defined as the difference between the amount of water produced or purchased and the amount of water sold to the customers (as described above).

Operation and Maintenance Records
It is essential to know when equipment was installed or repaired, the number of hours operated or other maintenance performed. Operation and maintenance records cover all the physical facilities of the water system including storage tanks, meters, pumps, vehicles, fire hydrants, valves, etc. Operation and maintenance manuals should be available for all appurtenances.

Emergency Response
Emergency planning is an important responsibility for governing bodies of water systems. Mayors/Board Members should make sure that the water system has contingency plans to handle emergency situations. Good emergency planning includes guidelines to help the system initiate preventive measures directed toward potential emergencies. Several areas in which Mayors/Board Members should plan for emergency response and prevention include the following:

- Emergency and standby systems including supply options for contamination, main breaks, drought, flood, or other disasters.
- Mayors/Board members should have access to all federal and state disaster emergency service numbers in the event of an emergency.
- Emergency conservation plans.
- Plans for emergency staffing.

MAINTENANCE PROGRAM

An important aspect of any effective and efficient water service organization is a maintenance program. The objectives of a maintenance program should be to eliminate the interruption of service caused by equipment failure and to extend the service life of all equipment for as long as practically possible and economically feasible. With this in mind, a good maintenance program will consist of a preventive maintenance plan, a general maintenance plan, an emergency maintenance plan, and a program evaluation. While each of these program topics will be discussed separately below, it is important to remember the effectiveness of the overall maintenance program will be determined by how closely each plan fits together.

Preventive maintenance provides a water system with three basic benefits:

1. Better service to all customers;
2. Increased equipment service life; and,
3. Efficient use of resources.

A preventive maintenance plan can be established by the use of planned work orders, planned work schedules and an evaluation process for all water system equipment. The use of planned work orders is an integral part of any preventive maintenance plan. Planned works orders should include the complete procedures to be performed, the total manpower (number of personnel, skill type, and total time) needed, and a list of materials required for the each preventive maintenance job. Compiling all planned work orders in an organized work schedule provides an efficient way of using the resources available to the water system, completing the work in a timely manner, and producing a framework for quality maintenance records. Equipment evaluation is one area overlooked when discussing a preventive maintenance plan. In order to evaluate the effectiveness of any preventive maintenance plan, a benchmark of the existing conditions of all equipment is required. When preventive maintenance work is completed, the water system should have the ability to evaluate equipment performance on both a short term and long term basis. Also, the preventive maintenance work itself can be evaluated to better improve the individual components of the plan. Preventative maintenance can be considered a time efficient and cost effective way of maintaining a water system. Scheduled preventative maintenance can lower total maintenance costs by allowing the system to purchase quality materials when time is available to obtain the best price. Scheduled preventative maintenance can be time efficient by the productive use of manpower and work schedules to complete the work while retaining some control over both the maintenance and operation of the equipment.

General maintenance is usually the largest component of any maintenance program. A general maintenance plan can be established by developing planned work orders, prioritizing work within daily, weekly, and monthly schedules, developing a material purchasing system, and evaluating the overall performance of all general maintenance work. As with the preventive maintenance plan, the use of planned work orders is vital to an effective general maintenance plan. Planning work in advance can assure that proper procedures are followed by each staff member, correct materials and supplies are available to complete the work, and a record of the completed work is available for filing in project and equipment files. Reviewing planned work orders will provide the water system with a means of fine tuning their general maintenance plan. Another key is a prioritized work schedule. Prioritizing work on a daily, weekly, and monthly basis creates a productive working environment for personnel. This results in more maintenance being completed at a much lower overall cost. Efficient maintenance requires that adequate materials and supplies be available for use at a moment's notice. It is important that water systems realize the need for developing a material purchasing system. This system would

include a complete material and supply inventory, standardized purchasing procedures, and a tracking method of all materials used by the water system. It is important to have a centralized area designated for the storage of all materials and supplies used by the water system. An evaluation process should be developed to determine the overall performance of all maintenance work along with its effectiveness over the service life of the equipment. **C**hanges in the types of procedures and materials used can be detected and corrected during the evaluation process. Also, the efficiency of a water system's use of resources and manpower as they pertain to the general maintenance plan can be determined.

An emergency maintenance plan is an invaluable component of most maintenance programs. This specialized plan will save both time and money when utilized properly. The foundation in developing an emergency plan is knowing the capabilities and limitations of the water system's staff and resources. The next step is to formulate contingencies for all types of emergencies that your water system has encountered in the past or could encounter in the future. It is important to be as specific as possible in identifying the many emergencies that could occur. Finally, a comprehensive list of consulting engineers, contractors, technical sales representatives, and material supply companies should be developed. This list should contain information as to the contact people, phone numbers (business and emergency), and the specific time and reasons each would be contacted. This contact list and a material/supply inventory list should be updated as often as possible and readily available for use at any time. Experience and planning are the keys to assuring the emergency maintenance plan operates properly. When the dust has settled and normal operation has resumed, a comprehensive evaluation of all actions taken as a part of the emergency plan should occur in a timely manner. At this point, evaluating the actions taken will hopefully result in a better emergency plan and, thus, an improved response to the next emergency.

The final component of a comprehensive maintenance program is a program evaluation. The only way to improve a water system's maintenance program is to periodically evaluate it to ensure the main objectives of eliminating the interruption of service caused by equipment failure and extending the service life of all equipment for as long as practically possible and economically feasible are being met. By applying the knowledge and experience gained from successful and unsuccessful maintenance work along with proper planning and training, the evaluation process will improve the overall maintenance program by strengthening the individual preventive, general, and emergency plans. As more evaluations are conducted, the water system will find itself gaining more experience, performing improved maintenance work, increasing the service life of all equipment, benefiting from more productive work, saving more money, and providing the best possible water service to the customers.

Preventive Maintenance

Preventive maintenance involves the regular inspection, testing, and replacement or repair of equipment and operational systems. As a **best management practice (BMP)**, preventive maintenance should be used to monitor and inspect equipment and other conditions that could cause breakdowns or failures of structures and equipment. A preventive maintenance program can prevent breakdowns and failures through adjustment, repair, or replacement of equipment before a major breakdown or failure occurs.

Preventive maintenance procedures and activities are applicable to almost all facilities. This concept should be a part of a general good housekeeping program designed to maintain a clean and orderly work environment. Preventive maintenance takes a proactive approach and seeks to prevent problems before they occur. Preventive maintenance programs can also save a facility

money by reducing the likelihood of having a system breakdown. In addition, a preventive maintenance program can bean effective community relations tool.

The primary limitations of implementing a preventive maintenance program include:

- Cost;
- Availability of trained preventive maintenance staff technicians; and,
- Management direction and staff motivation in expanding the preventive maintenance program.

Key Program Components

Elements of a good preventive maintenance program should include the following:

- Identification of equipment or systems that may malfunction.
- Establishment of schedules and procedures for routine inspections.
- Periodic testing of plant equipment for structural soundness.
- Prompt repair or replacement of defective equipment found during inspection and testing.
- Maintenance of a supply of spare parts for equipment that needs frequent repairs.
- Use of an organized record-keeping system to schedule tests and document inspections.
- Commitment to ensure that records are complete and detailed, and that they record test results and follow-up actions. Preventive maintenance inspection records should be kept with other visual inspection records.

Implementation

The key to properly implementing and tracking a preventive maintenance program is through the continual updating of maintenance records. Update records immediately after performing preventive maintenance or repairing an item and review them annually to evaluate the overall effectiveness of the program. Then refine the preventive maintenance procedures as necessary.

No quantitative data on the effectiveness of preventive maintenance as a BMP is available. However, it is intuitively clear that an effective preventive maintenance program will result in improved water system.

Costs

The major cost of implementing a preventive maintenance program is the staff time required to administer the program. Typically, this is a small incremental increase if a preventive maintenance program already exists at the facility.

SYSTEM AND PLANT MAINTENANCE

Overview

Maintenance is essential to the sustainability of every system. A preventive maintenance program combined with good operational practices will reduce the need for much of the corrective or emergency maintenance. A good preventive maintenance program will service not only mechanical and electrical equipment, but also the distribution and collection systems, grounds and buildings.

Maintenance includes all functions required to keep a facility operating in accordance with its original design capacities and performance. This includes repairs to broken, damaged, or worn-out equipment (emergency maintenance), and the periodic replacement of equipment and facilities that have reached the end of their design life (corrective or replacement maintenance).

Maintenance Program Elements

A comprehensive preventive maintenance program will have the following components:

- Equipment and component inventory
- Manufacturer's Literature
- Preventive maintenance task list
- Records of maintenance performed
- Technical resources
- Tools and equipment
- Spare parts inventory
- Personnel training
- Budgeting
- Scheduling and monitoring
- Recordkeeping

Equipment and Component Inventory

The backbone of any preventive maintenance program is a comprehensive listing or inventory of all system components and equipment. This listing should include a name and code number to every part of the system.

Manufacturer's Literature

For each piece of equipment or component identified in the inventor y, the manufacturer's literature should be obtained and compiled. For a new or upgraded facility, it is often the contractor's responsibility to provide manufacturer's information for all installed equipment.

Preventive Maintenance Task List

Once all of the equipment and components have been itemized and the manufacturer's literature has been collected, it is time to develop the comprehensive list of preventive maintenance tasks and to schedule them. Working systematically through each component of the facility, and remembering to address additional areas such as building and grounds maintenance, all preventive maintenance tasks must be identified and a frequency for scheduling should be assigned.

Records of Maintenance Performed

Records must be kept indicating which maintenance tasks have been performed and when. This is helpful for two reasons. First, it is imperative to verify the completion of each maintenance task. Second, to schedule future maintenance activities or to verify the condition of certain equipment, it is always helpful to be able to refer back to the record of past maintenance performed. All tanks should be inspected once per year.

Technical Resources
Manufacturer's maintenance specifications do not always provide complete information on all maintenance tasks. Certain general maintenance tasks are not covered in manufacturer's maintenance manuals, and many general maintenance tasks are not addressed in manufacturer's information at all.

Tools and Equipment
Every wastewater system must have suitable tools and the required specialized equipment available to perform maintenance. These tools and equipment should be of good quality, because they are likely to be used for many years.

Spare Parts Inventory
It is important to maintain an inventory of spare parts required for preventive maintenance, as well as for corrective and emergency maintenance. The initial inventory must be developed based on the requirements of each preventive maintenance task. Procedures also should be implemented to make sure that parts are replaced in the inventor y as they are used. Database management of spare parts inventories is usually necessary in larger utilities.

Personnel Training
Even a well-developed maintenance program with a full staff for implementation will not be able to complete the required work unless the staff are trained in both how to carry out the maintenance program and in the precise skills required to perform specific maintenance tasks. If the maintenance program has not been developed internally, the consultant or entity that developed it should be required to provide training in its implementation.

Budgeting for Maintenance
Budgeting for maintenance will require that sufficient funding is available for the following:

- Preventive Maintenance—Operating budget
- Labor (staff time, person hours) Parts and supplies
- Equipment Emergency Maintenance—Operations reserve account
- Labor (overtime) Materials, parts, supplies
  Replacement equipment Contractors
- Equipment Replacement—Capital reserve account
- Evaluation and design Labor Equipment cost Contractors

Estimating Staff Hours for Various Maintenance Functions (Task Analysis)
Sufficient labor must be available and funded for preventive maintenance functions. A good preventive maintenance program will document the schedule and work plan for each maintenance function. This schedule serves as the basis for estimating the labor requirements for preventive maintenance.

To determine trade and person-hour requirements for each preventive maintenance function, the function should be broken down into tasks. The tasks can then be analyzed further to

determine person-hours required for the specific maintenance function and the specific trades needed.

Setting Up a Reserve Account for Emergency Maintenance

Development of an annual budget for maintenance is relatively easy and straightforward, if emergency maintenance is sufficiently funded as annual reserve account contributions. Emergency maintenance is perhaps the most difficult function to address when trying to anticipate the funding requirements for an emergency repair reserve account. A good preventive maintenance program will cut down on emergency maintenance requirements. Unforeseen conditions, defective equipment and materials, and acts of nature make it certain that some emergency maintenance will always be a fact of life.

Devising Management Systems to Ensure Timely and Cost-Effective Maintenance

Basic preventive maintenance and record keeping systems are typically card systems that can be adapted to the complexity of the facility being served. Simple single card systems use one card for each piece of equipment, with the front detailing the equipment and its maintenance requirements and the back recording maintenance performed (see the Sample Equipment Maintenance Card). Multiple card systems are similar, but use separate cards for equipment information, maintenance requirements, and records of maintenance performed.

Many utilities are moving away from card systems and using one of the many software programs developed specifically for scheduling and tracking preventive maintenance. When used as part of an asset management strategy, these software programs can be very useful for the facilities.

A very important part of the preventive maintenance program development and improvement is appropriate scheduling of maintenance activities. Preventive maintenance schedules must consider variations in plant and equipment utilization. For example, in wastewater systems, this may involve scheduling to accommodate seasonal wet weather flows or intermittent industrial discharges.

Scheduling should consider weather and its effect on maintenance activities and personnel. Whenever possible, outdoor maintenance activities should be scheduled when favorable seasonal weather conditions can be expected.

Maintenance Reporting and Record Keeping

Once maintenance is performed, it must be properly recorded in a timely fashion, usually on the same day as performed. Preventive maintenance tasks are not complete until their accompanying paperwork is done.

Budgeting Basics for Wastewater Utilities

In a general sense, the budget can be divided into two basic categories: Operation & Maintenance (O&M) and Capital Expenditures.

The O&M budget provides for the support of routine maintenance, daily operations, and scheduled repairs. Every piece of equipment has a life cycle and will eventually deteriorate to the point of replacement. Without a long term Capital Improvement Plan (CIP) and a funded reserve account to support the CIP, your municipality could find itself without the funds to support needed replacements.

User fees, typically based on metered water consumption, are collected to fund the O&M component. A proper budget ensures that staff, chemicals, and parts are available to keep the system properly operating. A proper budget also helps the municipality to meet their SPDES Permit, which is a legal obligation.

Municipal debt obligations are paid by funds that are typically raised by a tax levy based upon assessed valuation. These funds pay for the debt service on the original bond issued to construct the plant and any other projects that have been undertaken and financed by bonds or bond anticipation notes.

SAFETY PROGRAMS

Every water system, regardless of size, needs to develop and implement a safety program to prevent injury to its employees and to avoid accidents involving the public. The development of a safety program should include information regarding potential job hazards, preventive safety measures, proper safety and emergency procedures for the use and operation of tools and equipment, and the proper methods of handling and reporting accidents and injuries. One person should be designated the responsibility for overseeing and maintaining the safety program.

A safety program is designed to maintain a safe workplace. All employees will be required to comply with all aspects of the safety program. The safety program should include a written safety plan designed to promote employee participation in the safety program. The Safety Plan should list procedures which have been established as part of the water system's safety program which identifies and describes water system hazards and provides safety measures.

The following sections will not outline the exact safety procedures that should be written in the Safety Plan. Rather, it will serve as a guide for recommended job activities for which safety procedures should be established and listed, as well as other general topics related to the safety program.

Identification and Description of Hazards

The safety hazards associated with water supply systems are numerous and varied. Water system personnel should be made aware of all hazards, where these hazards are present in the water system, and how they may affect the employees. The following list identifies some of the general hazards faced by water system employees:

1. Bodily injury caused by falls, improper lifting, improper use of tools and equipment, and accidents involving moving mechanical equipment;
2. Electrical shock and burns;
3. Injury caused by improper chemical handling;
4. Exposure to chlorine gas;
5. Injury caused by improper entrance into confined spaces; and
6. Trenching and shoring cave-ins.

The Safety Plan also should include a detailed description of each hazard, including where each hazard may be present and what the health risk from each hazard may be to the employee.

Recommended Safety Program

Once the job hazards have been identified and described, it is important to outline the proper safety procedures which should be used when performing each job task to reduce these hazards as much as possible. Therefore, the Safety Plan should provide detailed safe operating procedures for specific aspects of water system employee job responsibilities. Recommended safety procedures for each of these water system job tasks can be found in the AWWA's Manual M3, Safety Practices for Water Utilities, as well as in other reference materials on water supply system operation. Manufacturer's literature also may be a good source of safety procedures for some of the tools, equipment, and machinery.

SAFETY

Based on past studies, the water and wastewater industry has one if the highest injury rates in the nation. Workers in these areas are involved in construction and excavations, confined spaces, hazardous chemicals, and mechanical equipment that pose a serious injury risk when proper training, equipment, and procedures are not utilized. The **Occupational Safety and Health Administration (OSHA)** is responsible for developing regulations regarding worker safety and protection.

This section will introduce the topic of safety but is not intended to provide detailed information on all the safety topics important to operators. Each of us is responsible for his/her own safety and for the safety of others working in or entering our facilities. The water industry is one of the most hazardous, so it is very important for operators to be informed about situations that pose a safety risk.

Safety Conditions

You may encounter potentially hazardous conditions on a regular basis while operating, maintaining, and repairing water system equipment. You should be aware of these hazards and use good judgment when you encounter a potentially hazardous situation. The life you save may be your own.

Accident prevention is everyone's job, but it is the employer who is ultimately responsible for providing a safe workplace. Some of the hazards an operator may encounter include, but are not limited to:

- Lifting injuries
- Electric shock
- Slips and falls
- Chemical burns
- Eye injuries
- Excavation accidents (cave-ins)
- Construction accidents
- Inhalation accidents (dust, toxic gases and vapors)
- Oxygen deficient confined spaces (less than 19.5% oxygen)

Accidents are the result of unsafe actions by employees or unsafe conditions that exist in the water system. Unsafe actions include, but are not limited to:

- Removing or disabling machinery safety devices
- Failure to wear personal protective equipment
- Using equipment or tools not designed for the job
- Using defective equipment or tools
- Standing on or riding the outside of moving equipment
- Failure to secure or tie down heavy loads
- Operating vehicles, including heavy equipment, at an unsafe speed
- Failure to use lockout/tagout devices

Some of the more common unsafe conditions found at a small water system may include, but are not limited to:

- Poor housekeeping

- Improper storage of chemicals
- Doors removed from electrical panels
- Machinery guards or safety devices missing
- Fire and explosion hazards
- Low clearance hazards
- Improperly secured ladders or scaffolds
- Protruding objects
- Inadequate lighting
- Noise above safe decibel levels
- Lack of warning placards
- Confined spaces

You should keep your water system facilities clean and orderly. Emergency equipment and doorways should be kept clear and machine guards replaced after repairing equipment. Doors should be replaced on the electrical panels when you complete a wiring job or replace a breaker.

The door to the pump house or chlorine room should open outward for ease in entering and leaving the structure. Abnormal machine or equipment operation, electrical hazards or other unsafe conditions should be corrected promptly. Do not let unsafe conditions become commonplace. Eventually, an unsafe condition will result in an accident.

Unfortunately, it is often the 5 minute task that causes many injuries. Quick fixes usually promote unsafe acts. Do not let 5 minute tasks result in an injury to yourself or an employee.

Become skilled at recognizing unsafe conditions. Your knowledge of unsafe conditions and unsafe acts gives you foresight to correct a hazardous situation before an accident occurs. Together materials handling, falls, falling objects and machinery cause more than 60% of all workplace injuries.

Employers are responsible for providing employees with the proper safety equipment and training in its use. They are also responsible for development and implementation of safety policies for their workplace. The employees, after proper training, are responsible for recognizing the safety issues; following approved safety procedures, and properly utilizing the associated safety equipment.

Personal Protective Equipment

Personal Protective Equipment (PPE) may be uncomfortable and increase stress, but is for your protection. When wearing PPE, the body's ability to cool is usually diminished. Nevertheless, PPE is frequently required to reduce the risk of injury. PPE includes steel-toed boots, safety glasses or goggles, face shields, earplugs, gloves or chemical protective clothing. The employer is responsible for providing PPE for their employees.

Respiratory protection equipment is commonly used because of the danger of inhalation, which provides a route of entry into the bloodstream for dangerous volatile chemicals. There are 2 types of respiratory protection devices called respirators: air purifying and air supplying. Both consist of a face piece connected to either an air source or an air-purifying device. The air-purifying respirator uses cartridges with filters to purify air before it is inhaled. This type of protection is not adequate in an oxygen deficient atmosphere.

Hazard Communications
OSHA established the Hazard Communication Standard in 1986. The standard was created to provide an information system on hazardous chemicals for both employers and employees. The Haz-Com Standard requires employers to ensure their employees know what hazardous materials exist in the workplace, how to safely use these materials, and how to deal with any emergencies that arise during use. Employers are required to provide the proper safety equipment, train employees in the safe use of any hazardous materials on a jobsite, and maintain records of both.

Producers of hazardous materials are required to provide customers with a **Material Safety Data Sheet (MSDS)** for each individual chemical or material. MSDS's must be kept on file and available to employees. Employee training should also include how to read and understand the information on the MSDS. The hazards that are involved fall into two basic categories: Health Hazards and Physical hazards.

Health hazards refer to immediate or long-term harm to the body caused by exposure to hazardous chemicals. Physical hazards like flammability or corrosivity can also cause injury to skin, eyes and the respiratory system. MSDS's are divided into 8 sections.
1. Manufacturers Contact Information
2. Hazardous Ingredients/Identity Information
3. Physical/Chemical Characteristics
4. Fire and Explosion Hazard Data
5. Reactivity Data
6. Health Hazard/First Aid Information
7. Precautions for Safe Handling and Use
8. Control/Cleanup Measures

NFPA Color-Code Warning System
OSHA uses a system based on the **National Fire Protection Association (NFPA)** diamond warning symbol as part of the MSDS information. This code is also required for all container labels. The NFPA symbol has four color-coded diamond-shaped sections. The top (Red) diamond is the Flammability Hazard rating. The left (Blue) diamond is the Health Hazard rating. The right (Yellow) diamond is the Reactivity Hazard rating. The bottom (White) diamond contains special symbols to indicate properties not explained by the other categories. A number–based rating system is used for each section, ranging from 0 – least dangerous to 4 – extremely dangerous.

Lock Out/Tag Out
Lock out/tag out (LOTO) regulations deal with the need to isolate a machine from its energy source to prevent it from starting while work is being done in and around the equipment. Energy sources can include electrical energy, hydraulic energy, pneumatic energy, thermal energy, and chemical energy. This can be either active energy or stored energy. Stored energy can take many forms. Some examples of stored energy are; electrical energy stored in capacitors, pneumatic energy stored in a compressor tank, and hydraulic water pressure in an isolated line. Any stored energy must be dissipated prior to working on the equipment. Employers are responsible for establishing an “Energy Control Plan” for LOTO work and supply each worker with their individual LOTO locking devices.

LOTO requires workers to isolate and de-energize these sources and lock and tag them prior to working on the equipment or process. Only trained personnel should conduct lock out/tag out procedures. Each individual involved in the work should attach their personal LOTO lock to the

disconnect or isolation device. This assures that the equipment cannot be restarted until each individual is finished with their task and is clear of the equipment. Tags are used to provide information regarding the date and nature of the lockout and the individual responsible for removing the lockout. Tags are not substitutes for locks. Any isolation that can be locked must be locked and tagged. Lockout devices may also include chains, valve clamps, wedges, jacks, or key blocks.

Anyone who enters a LOTO work area must be informed that a LOTO situation exists. If they are to be involved in the work, they must also apply their own LOTO locks. Workers that leave a LOTO site must take their LOTO locks with them. If work is not completed at the end of a shift, all LOTO locks must be removed and be replaced with an equipment protection lock until work resumes. If equipment must be temporarily restarted, the LOTO must be removed during the restart and reapplied before work can continue.

Confined Space Entry

The water and wastewater industry has one of the highest numbers of confined space injuries per capita in the country. The vast majority of confined space related injuries result in fatalities. Another disturbing fact is that 40% of the confined space related fatalities are people who tried to rescue someone else from a confined space.

A confined space is defined by the following parameters. It must be large enough for a person to enter and do work. It has openings that make entry or exit difficult. It is not intended for continuous occupancy. Any open surface tank that is deeper than four feet is also considered a confined space. Confined spaces fall into two categories; permit required and non-permit required. A confined space becomes permit required when it has potential for a hazardous atmosphere, potential for engulfment, a hazardous internal configuration, or other recognized hazards such as dangerous equipment or hot work (welding, cutting torch, etc.) that is in progress.

All employees involved in confined space entries must have the proper training in entry procedures and use of safety equipment. An entry supervisor is responsible for conducting the testing and completing the permit. Atmospheric testing should include oxygen concentration, Lower Explosive Limit for explosives, and any toxic gases that may be present. The oxygen concentration must be between 19.5-23.5%. The alarm point for explosives is 10% of Lower Explosive Limit (LEL).

An attendant must be present and stationed outside the confined space to monitor the entrants while they are working. The attendant must maintain constant verbal and visual communications with the entrants. The attendant must also be prepared to instruct the entrants to exit the confined space should the equipment fail or the entrants exhibit impaired judgment.

Any confined space must be tested for a hazardous atmosphere before the entry. Monitoring must continue while the entrants are in the confined space. Permit required confined spaces also require ventilation during the entry and self-contained or supplied air must be used if ventilation fails to produce a safe atmosphere. Permit required confined space entries also require rescue equipment such as a harness and tripod for emergency rescues. If the space is configured in a way that prevents the use of self-rescue equipment, an emergency rescue team must be on-site during the entry. When the entry is completed, the entry supervisor must complete the permit form and file a copy with the appropriate supervisor and a confined space entry master file. Non-

permit confined spaced must be reassessed periodically. Any non-permit space can be reclassified, as permit required, based on the results of these assessments.

System security

The three "D"s of security are: Deter, Detect and Delay. Intrusion should be deterred, and detected if it occurs. Intruders should be slowed down (delayed) as much as possible to allow more time for their apprehension.

Water system security steps include:

1. Vulnerability assessment - Identify vulnerabilities such as doors, windows, hatches and locations in remote areas.
2. Eliminate or mediate vulnerabilities - Install locks and use them. Install fences, alarms and security lights. Ask for police patrols. Consider asking neighbors to watch over your facilities for you (adopt-a-facility).
3. Emergency response - Know who to call in an emergency. Create a list of emergency telephone numbers.
   - Fire
   - Police
   - IDEM
   - Local health department
   - Critical users
   - Your boss
   - Government officials
   - Nearby water systems
   - Laboratories
   - Contractors
   - Chemical suppliers
   - Parts/equipment suppliers
   - Insurance agent
   - Local media (radio, TV and newspaper)

Plan ahead for your emergencies. Think about what might go wrong, and try to plan for it. Like a good scout, "be prepared." Always remember, people come first, then property. Be safe and do not take unnecessary risks.

THE WEST VIRGINIA GOVERNMENTAL ETHICS ACT

Citizens must have confidence that their elected and appointed officials will handle the business of government in an ethical manner. The way in which officials make public decisions, such as the awarding of contracts, the management of public funds, and the hiring of staff, must be above reproach. Indeed, local officials and employees need to avoid even the appearance of misconduct.

In response to violations of the public trust by public officials, ethics laws and criminal statutes have been established to guide the conduct of officials and public employees.

In addition, public service district officials and employees are subject to many other local, state, and federal laws and regulations that are designed to control their ethical conduct. Some of these laws impose criminal sanctions and often seek to prevent certain overt misconduct. Other provisions are civil or criminal and may not only seek to prevent overt misconduct but also to avoid activities that give the appearance of misconduct. Finally, in addition to formal control of official conduct, public opinion and the media play a significant role in shaping the kind of conduct that a local community will expect.

Public Ethics Suggestions

Ethics codes address the basic situations and issues that face a public service district, its members and employees. However, in many situations the community will demand a higher standard. Successful boards will recognize and conform to these higher standards. One general guideline is to avoid doing those things, which may be technically legal but would not reflect favorably on the board or board member should they be published on the front page of the local paper. Often, this means turning down attractive business opportunities or economic relationships, which might damage the perceived quality of the board and its members.

Ethics Codes and Administration

The goals of a sound ethics program are to promote public confidence in the organization and its officials, to maintain fairness and impartiality in rendering services, and to avoid the appearances of impropriety. Ethics programs need to be designed to avoid conflicts and appearances of conflict by the use of established standards of conduct and procedures for financial disclosure. Ethics codes not only provide a mechanism for dealing with misconduct but, more importantly, they provide board members and employees with a road map for acceptable behavior.

The West Virginia Governmental Ethics Act

The West Virginia Governmental Ethics Act was created to ensure proper ethical behavior among public officials and public employees. The Act covers those employees who are elected, appointed or hired to serve State, county or municipal governments and their respective departments, agencies, boards and commissions. As a result, public service district boards and its members are regulated by the Ethics Act.

Gifts

The Act sets forth that those persons covered by the Act shall not use their public office or position for their own private gain or that of another. Those employees or board members shall not solicit gifts, except for charitable purposes from which they derive no direct personal benefit. They shall not solicit a gift for any purpose from a subordinate.

Furthermore, the Act states that public officials and employees shall not accept a gift from a person with an interest in their governmental activity, except that the following gifts are to be considered acceptable:

- meals and beverages;
- ceremonial gifts or awards of insignificant value;
- unsolicited gifts of nominal value;
- reasonable expenses incurred in appearing at a speaking engagement;
- free tickets to political, charitable or cultural events customarily given as a courtesy to the office;
- purely private and personal gifts; and
- gifts from relatives by blood or marriage or member of the same household.

Honorariums may not be accepted by elected officials, although acceptable by all other covered persons. Nothing in the Act prohibits the solicitation, giving or receipt of a lawful political contribution.

Interests in Public Contracts

The Act places certain restrictions on public contracts. It says that no

- public official or employee; or
- member of his or her immediate family; or
- business with which he or she is associated may be a party to or have any interest in a contract over which he or she may have control or direct authority to enter into.

Confidential Information

The Act also sets forth that those persons covered by the Act may not knowingly and improperly disclose confidential information acquired in the course of official duties or use it to further their personal interests or those of another.

Prohibited Representation

Those persons covered by the Act may not, during or after government service, represent another in a

- contested case;
- rate-making proceeding;
- license or permit application; and
- regulation filing or other specific matter, which arose during their government service and in which they personally participated in a decision-making, advisory or staff support capacity.

Limitation on Practice

The Act states that no elected or appointed public official or full-time staff attorney or accountant shall, while, or within six months after, serving with a governmental entity authorized to hear contested cases or make regulations, represent another person before that entity in the following matters:

- contested case;
- rate-making proceeding;
- license or permit application;

- regulation filing; and
- to influence the expenditure of public funds.

However, this prohibition does not apply to current or former State legislators or current or former professional legislative employees. The West Virginia Ethics Commission has the power to grant exemptions to the six-month prohibition if good cause is shown.

Employment by Regulated Persons Prohibited
Full-time public employees and officials may not seek employment with or be employed by a person or company that is or may be regulated by the governmental body by which they are employed. This prohibition applies only to those employees and officials who exercise policymaking, non-ministerial or regulatory authority. Once again, the Ethics Commission can grant exemptions should cause be shown.

Licensing and Ratemaking Proceedings
Persons covered by the Governmental Ethics Act may not take part in any license or ratemaking proceeding that directly affects the license or rates of:

1. A company in which they, or the immediate members of their family, have more than a 10% interest or,
2. A person or company which has during the past year purchased more than $1,000 in goods and services from:
   - the covered employee or,
   - the covered employee's immediate family members, or
   - a company in which they, or the immediate members of their family have more than a 10% interest.

The Act does not prohibit a covered person from performing purely ministerial functions in regard to such proceedings. The covered person may participate in non-ministerial functions affecting a person or company identified in number two above, if a written acknowledgment of the customer relationship is filed with the rate-making or licensing agency.

Double Dipping - Expense Reimbursement
The Act states that covered persons may not seek reimbursement for expenses incurred in the course of their public duties which have actually been paid by a lobbyist or any other person.

In addition to codes of ethics, laws governing financial disclosure and public access to meetings have requirements for openness combined with legal sanctions for failure to comply. The underlying theory of all these approaches is quite simple. The more accessible information is to the public, the less likely it is that there will be questions regarding board officials and employees conduct. The public has the right to know if a public service district is looking out for the public official's best interest rather than the good of the public.

THE FOUR FUNCTIONS OF MANAGEMENT

The functions of management uniquely describe managers' jobs. The most commonly cited functions of management are planning, organizing, leading, and controlling, although some identify additional functions. The functions of management define the process of management as distinct from accounting, finance, marketing, and other business functions. Management is a distinct intellectual activity consisting of several functions. Regardless of their industry, organization, or level of management, engage in the functions of management.

PLANNING

Planning is the function of management that involves setting objectives and determining a course of action for achieving these objectives. Planning requires that managers be aware of environmental conditions facing their organization and forecast future conditions. It also requires that managers be good decision-makers.

Planning is a process consisting of several steps. The process begins with environmental scanning, which simply means that planners must be aware of the critical contingencies facing their organization in terms of economic conditions, their competitors, and their customers. Planners must then attempt to forecast future conditions. These forecasts form the basis for planning.

Planners must establish objectives, which are statements of what needs to be achieved and when. Planners must then identify alternative courses of action for achieving objectives. After evaluating the various alternatives, planners must make decisions about the best courses of action for achieving objectives. They must then formulate necessary steps and ensure effective implementation of plans. Finally, planners must constantly evaluate the success of their plans and take corrective action when necessary. There are many different types of plans and planning.

Strategic Planning

Strategic planning involves analyzing competitive opportunities and threats, as well as the strengths and weaknesses of the organization, and then determining how to position the organization to compete effectively in their environment. Strategic planning has a long time frame, often three years or more. Strategic planning generally includes the entire organization and includes formulation of objectives. Strategic planning is often based on the organization's mission, which is its fundamental reason for existence. An organization's top management most often conducts strategic planning.

Tactical Planning

Tactical planning is intermediate-range planning that is designed to develop relatively concrete and specific means to implement the strategic plan. Middle-level managers often engage in tactical planning. Tactical planning often has a one- to three-year time horizon.

Operational Planning

Operational planning generally assumes the existence of objectives and specifies ways to achieve them. Operational planning is short-range planning that is designed to develop specific action steps that support the strategic and tactical plans. Operational planning usually has a very short time horizon, from one week to one year.

ORGANIZING

Organizing is the function of management that involves developing an organizational structure and allocating human resources to ensure the accomplishment of objectives. The structure of the organization is the framework within which effort is coordinated. The structure is usually represented by an organization chart, which provides a graphic representation of the chain of command within an organization. Decisions made about the structure of an organization are generally referred to as "organizational design" decisions.

Organizing also involves the design of individual jobs within the organization. Decisions must be made about the duties and responsibilities of individual jobs as well as the manner in which the duties should be carried out. Decisions made about the nature of jobs within the organization are generally called "job design" decisions.

Organizing at the level of the organization involves deciding how best to departmentalize, or cluster jobs into departments to effectively coordinate effort. There are many different ways to departmentalize, including organizing by function, product, geography, or customer. Many larger organizations utilize multiple methods of departmentalization. Organizing at the level of job involves how best to design individual jobs to most effectively use human resources.

Traditionally, job design was based on principles of division of labor and specialization, which assumed that the more narrow the job content, the more proficient the individual performing the job could become. However, experience has shown that it is possible for jobs to become too narrow and specialized. When this happens, negative outcomes result, including decreased job satisfaction and organizational commitment and increased absenteeism and turnover.

Recently many organizations have attempted to strike a balance between the need for worker specialization and the need for workers to have jobs that entail variety and autonomy. Many jobs are now designed based on such principles as job enrichment and teamwork.

LEADING

Leading involves influencing others toward the attainment of organizational objectives. Effective leading requires the manager to motivate subordinates, communicate effectively, and effectively use power. If managers are effective leaders, their subordinates will be enthusiastic about exerting effort toward the attainment of organizational objectives.

To become effective at leading, managers must first understand their subordinates' personalities, values, attitudes, and emotions. Therefore, the behavioral sciences have made many contributions to the understanding of this function of management. Personality research and studies of job attitudes provide important information as to how managers can most effectively lead subordinates.

Studies of motivation and motivation theory provide important information about the ways in which workers can be energized to put forth productive effort. Studies of communication provide direction as to how managers can effectively and persuasively communicate. Studies of leadership and leadership style provide information regarding questions such as, "What makes a manager a good leader?" and "In what situations are certain leadership styles most appropriate and effective?"

CONTROLLING

Controlling involves ensuring that performance does not deviate from standards. Controlling consists of three steps, which include establishing performance standards, comparing actual performance against standards, and taking corrective action when necessary. Performance standards are often stated in monetary terms such as revenue, costs, or profits, but may also be stated in other terms, such as units produced, number of defective products, or levels of customer service.

The measurement of performance can be done in several ways, depending on the performance standards, including financial statements, sales reports, production results, customer satisfaction, and formal performance appraisals. Managers at all levels engage in the managerial function of controlling to some degree.

The managerial function of controlling should not be confused with control in the behavioral or manipulative sense. This function does not imply that managers should attempt to control or manipulate the personalities, values, attitudes, or emotions of their subordinates. Instead, this function of management concerns the manager's role in taking necessary actions to ensure that the work-related activities of subordinates are consistent with and contributing toward the accomplishment of organizational and departmental objectives.

Effective controlling requires the existence of plans, since planning provides the necessary performance standards or objectives. Controlling also requires a clear understanding of where responsibility for deviations from standards lies. Two traditional control techniques are the budget and the performance audit. Although controlling is often thought of in terms of financial criteria, managers must also control production/operations processes, procedures for delivery of services, compliance with company policies, and many other activities within the organization.

The management functions of planning, organizing, leading, and controlling are widely considered to be the best means of describing the manager's job as well as the best way to classify accumulated knowledge about the study of management. Although there have been tremendous changes in the environment faced by managers and the tools used by managers to perform their roles, managers still perform these essential functions.

IMPORTANT MANAGEMENT SKILLS

A Manager must utilize skills to effectively organize the team, to achieve a successful goal, in the least amount of time, and cost. Management skills are learned in school, by experience, and information gathered from employees. A manager knows how to lead the team, but never be a dictator. Listed below are management skills:

Recruit and Interview
Managers recruit and interview the best candidates for the organization. Matching the education, experience, and knowledge, for a specific job. Letting each candidate know what are the expectations, and receiving any suggestions. Planning ahead to make efficient use of individual strengths will facilitate overall individual and team success.

Organization
Organizing the team to achieve a specific goal. Delegating each team member, to an assigned task. Remembering, never to over extend responsibilities to one person. Always, having the confidence and giving respect to each member.

Communicating
A manager needs to precisely communicate, the goal of any task, what are the expectations from each department, and specifying the time, when assignments need to be completed. Informing team members by a memorandum or writing E-mail. The manager and team members should have telephone numbers to contact each other, because unfortunate events could happen during a project, questions sometimes need to be answered, and kept informed of any delays.

Budget
Managing a budget is critically important for the financial integrity of any project. Under budgeting a project, may undermine the ability to get the project done on time or failure. Managing a project that is under budget, certainly is most desirable for the cost savings.

Motivation
Managers can motivate their staff by praise and incentives, to create a friendly working environment, and having diligent employees, that are less likely to resign.

Ethics
Managers should uphold business ethics. Disregarding ethical standards can ruin the reputation of a manager and the loss of respect earned from his employees, and clients. Ethics can be learned, but honesty comes from the heart.

Art of Negotiating
A manager has to negotiate an equitable agreement with a customer, or vendor that is profitable to his organization. Also, will make the opposing side happy, to return for future deals.

Evaluation
Upon the completion of any task or assignment, the manager should evaluate the team effort. Recognizing if there were any failures that needed to be rectified and praising those for outstanding work. Learn from both mistakes and successes.

A responsible manager knows when to take advice and accept any criticism, with an open mind.

WHAT MAKES A GREAT MANAGER

The first steps to becoming a really great manager are simply common sense; but common sense is not very common. This section suggests some common-sense ideas on the subject of great management. The major problem when you start to manage is that you do not actually think about management issues because you do not recognize them. Put simply, things normally go wrong not because you are stupid but only because you have never thought about it. Management is about pausing to ask yourself the right questions so that your common sense can provide the answers.

When you gain managerial responsibility, your first option is the easy option: do what is expected of you. You are new at the job, so people will understand. You can learn (slowly) by your mistakes and probably you will try to devote as much time as possible to the rest of your work (which is what you were good at anyway). Those extra little "management" problems are just common sense, so try to deal with them when they come up. Your second option is far more exciting: find an empty telephone box, put on a cape and bright-red underpants, and become a “Super Manager”.

When you become a manager, you gain control over your own work; not all of it, but some of it. You can change things. You can do things differently. You actually have the authority to make a huge impact upon the way in which your staff work. You can shape your own work environment. You can be instrumental in improvements that affect people other than yourself, which is very rewarding.

In a large company, your options may be limited by the existing corporate culture - and you can act like a crab: face directly into the main thrust of corporate policy, and make changes sideways. You do not want to fight the system, but rather to work better within it. In a small company, your options are possibly much wider (since custom is often less rigid) and the impact that you and your team has upon the company's success is proportionately much greater. Thus once you start working well, this will be quickly recognized and nothing gains faster approval than success.

The bad news is that you will meet resistance to change. Your salvation lies in convincing your team (who are most effected) that what you are doing can only do them good, and in convincing everyone else that it can do them no harm. The good news is that soon others might follow you.

The manger of a small team has three major roles to play:

a) Planner

A Manager has to take a long-term view; indeed, the higher you rise, the further you will have to look. While a team member will be working towards known and established goals, the manager must look further ahead so that these goals are selected wisely. By thinking about the eventual consequences of different plans, the manager selects the optimal plan for the team and implements it. By taking account of the needs not only of the next project but the project after that, the manager ensures that work is not repeated nor problems tackled too late, and that the necessary resources are allocated and arranged.

b) Provider

The Manager has access to information and materials which the team needs. Often he/she has the authority or influence to acquire things which no one else in the team could. This role for the manager is important simply because no one else can do the job; there is some authority which

the manager holds uniquely within the team, and the manager must exercise this to help the team to work.

c) Protector

The team needs security from the vagaries of less enlightened managers. In any company, there are short-term excitements which can deflect the work-force from the important issues. The manager should be there to guard against these and to protect the team. If a new project emerges which is to be given to your team, you are responsible for costing it (especially in terms of time) so that your team is not given an impossible deadline. If someone in your team brings forward a good plan, you must ensure that it receives a fair hearing and that your team knows and understands the outcome. If someone is in your team has a problem at work, you have to deal with it.

Vision

One of the most cited characteristics of successful managers is that of vision. The meaning of vision which concerns you as a manager is: a vivid idea of what the future should be. This has nothing to do with prediction but everything to do with hope. It is a focus for the team's activity, which provides sustained long-term motivation and which unites your team. A vision has to be something sufficiently exciting to bind your team with you in common purpose. This implies two things:

- You need to decide where your team is headed; and,
- You have to communicate that vision to them.

Communicating a vision is not simply a case of painting it in large red letters across your office wall (although, as a stunt, this actually might be quite effective), but rather bringing the whole team to perceive your vision and to begin to share it with you. A vision, to be worthy, must become a guiding principle for the decision and actions of your group.

Once you have identified your vision, you can illustrate it with a concrete goal, a *mission*. This leads to the creation of the famous “mission statement”. Let us consider first what a mission is, and then return to a vision.

A mission has two important qualities:

- It should be tough, but achievable given sufficient effort; and,
- It must be possible to tell when it has been achieved.

If you are stuck for a mission, think about using Quality as a focus since this is something on which you can build. Similarly, any aspects of great management which are not habitual in your team at the moment could be exemplified in a mission statement. For instance, your team mission might be to reduce the time spent in meetings by half within six months.

Once you have established a few possible mission statements, you can try to communicate (or decide upon) your vision. This articulates your underlying philosophy in wanting the outcomes you desire. Not, please note, the ones you think you should desire but an honest statement of personal motivation; for it is only the latter which you will follow with conviction and so of which you will convince others. In general, your vision should be unfinishable, with no time limit, and inspirational; it is the driving force which continues even when the mission statement has been achieved. Even so, it can be quite simple: Walt Disney's vision was "to make people happy". As a manager, yours might be something a little closer to your own team: mine is "to make working here exciting".

There is no real call to make a public announcement of your vision or to place it on the notice board. If your vision is not communicated to your team by what you say and do, then you are not applying it yourself. It is *your* driving motivation - once you have identified it, act on it in every decision you make.

Prescience

Prescience is something for which you really have to work at. Prescience is having foreknowledge of the future. Particularly as a Protector, you have to know in advance the external events which impact upon your team. The key is information and there are three type:

- Information you hear (tit-bits about travel, meetings, etc);
- Information you gather (minutes of meetings, financial figure, etc); and,
- Information you infer (*if* this happens *then* my team will need ...).

Information is absolutely vital. Surveys of decision making in companies reveal that the rapid and decisive decisions normally stem not from intuitive and extraordinary leadership but rather from the existence of an established information system covering the relevant data. Managers who know the full information can quickly reach an informed decision.

The influences upon you and your team stem mostly from within the company and this is where you must establish an active interest. Let us put that another way: if you do not keep your eyes open you are failing in your role as Protector to you team. Thus if your manager comes back from an important meeting, sit down with him/her afterwards and have a chat. There is no need to employ subterfuge, merely ask questions. If there are answers, you hear them; if there are none, you know to investigate elsewhere. If you can provide your manager with suggestions/ideas then you will benefit from his/her gratitude and future confidence(s). You should also talk to people in other departments; and never forget the secretaries who are normally the first to know everything.

Now some people love this aspect of the job, it makes them feel like politicians or espionage agents; others hate it, for exactly the same reasons. The point is that it must be done or you will be unprepared; but do not let it become a obsession.

Gathering information is not enough on its own: you have to process it and be aware of implications. The trick is to try to predict the next logical step from any changes you see. This can get very complicated, so try to restrict yourself to guessing one step only. Thus if the sales figures show a tailing off for the current product (and there are mutterings about the competition) then if you are in development, you might expect to be pressured for tighter schedules; if you are in publicity, then there may soon be a request for launch material; if you are in sales, you might be asked to establish potential demand and practical pricing levels. Since you know this, you can have the information ready (or a schedule defense prepared) for when it is first requested, and you and your team will shine.

Another way of generating information is to play "what if" games. There are dreadfully scientific ways of performing this sort of analysis, but reasonably you do not have the time. The sort of work this article is suggesting is that you, with your team or other managers (or both), play "what if" over coffee now and then. All you have to do is to postulate a novel question and see how it runs.

A productive variation on the "what if" game is to ask: "what can go wrong?" By deliberately trying to identify potential problems at the onset, you will prevent many and compensate for many more. Set aside specific time to do this type of thinking. Call it contingency planning and put in your diary as a regular appointment.

Flexibility

One of the main challenges in management is in avoiding pat answers to everyday questions. There is nothing so dull, for you and your team, as you pulling out the same answer to every situation. It is also wrong. Each situation, and each person, is unique and no text-book answer will be able to embrace that uniqueness - except one: you are the manager, you have to judge each situation with a fresh eye, and you have to create the response. Your common sense and experience are your best guide in analyzing the problem and in evolving your response.

Even if the established response seems suitable, you might still try something different. By trying variations upon standard models, you evolve new and potentially fitter models. If they do not work, you do not repeat them (although they might be tried in other circumstances); if they work better, then you have adapted and evolved.

This deliberate flexibility is not just an academic exercise to find the best answer. The point is that the situation and the environment are continually changing; and the rate of change is generally increasing with advancing technology. If you do not continually adapt (through experimentation) to accommodate these changes, then the solution which used to work (and which you still habitually apply) will no longer be appropriate. You will become the dodo. A lack of flexibility will cause stagnation and inertia. Not only do you not adapt, but the whole excitement of your work and your team diminish as fresh ideas are lacking or lost.

Without detracting from the main work, you can stimulate your team with *changes of focus*. This includes drives for specific quality improvements, mission statements, team building activities, delegated authority, and so on. You have to decide how often to "raise excitement" about new issues. On the one hand, too many focuses may distract or prevent the attainment of any one; on the other hand, changes in focus keep them fresh and maintain the excitement.

By practicing this philosophy yourself, you also stimulate fresh ideas from your team because they see that it is a normal part of the team practice to adopt and experiment with innovation. Thus not only are you relieved of the task of generating the new ideas, but also your team acquire ownership in the whole creative process.

By providing changes of focus you build and motivate your team. For if you show in these changes that you are actively working to help them work, then they will feel that their efforts are recognized. If you also include their ideas in the changes, then they will feel themselves to be a valued part of the team. If you pace these changes correctly, you can stimulate and continually increase productivity. And notice, this is not slave driving. The increased productivity comes from the enthusiasm of the workforce; they actually want to work better.

A General Approach

In management there is always a distant tune playing in the background. Once you hear this tune, you will start humming it to yourself: in the shower, in the boardroom, on the way to work, when watching the sunrise. It is a simple tune which repeats again and again in every aspect of your managerial life; if goes:

PLAN - MONITOR - REVIEW

Before you start any activity you must STOP and THINK about it: what is the objective, how can it be achieved, what are the alternatives, who needs to be involved, what will it cost, is it worth doing? When you have a plan you should STOP and THINK about how to ensure that your plan is working. You must find ways of monitoring your progress, even if it is just setting deadlines for intermediate stages, or counting customer replies, or tracking the number of soggy biscuits which have to be thrown away, whatever: choose something which displays progress and establish a procedure to ensure that happens. But before you start, set a date on which you will STOP again and RETHINK your plan in the light of the evidence gathered from the monitoring. Whenever you have something to do, consider not only the task but first the method. Thus if there is a meeting to decide the marketing slogan for the new product you should initially ignore anything to do with marketing slogans and decide:

- How should the meeting be held;
- Who can usefully contribute;
- How will ideas be best generated;
- What criteria are involved in the decision; and,
- Is there a better way of achieving the same end.

If you resolve these points first, all will be achieved far more smoothly. Many of these decisions do not have a single "right" answer, the point is that they need to have "an" answer so that the task is accomplished efficiently. It is the posing of the questions in the first place which will mark you out as a really great manager - the solutions are available to you through common sense.

Once the questions are posed, you can be creative. For instance, "is there a better way of producing a new slogan?" could be answered by a quick internal competition within the company (answers on a postcard by tomorrow at noon) asking everybody in the company to contribute an idea first. This takes three minutes and a secretary to organize, it provides a quick buzz of excitement throughout the whole company, it refocuses everyone's mind on the new product and so celebrates its success, all staff feel some ownership of the project, and you start the meeting with several ideas either from which to select a winner or to use as triggers for further brainstorming. Thus with a simple -- pause -- from the helter-skelter of getting the next job done, and a moment's reflection, you can expedite the task and build team spirit throughout the entire company.

It is worth stressing the relative importance of the REVIEW. In an ideal world where managers are wise, information is unambiguous and always available, and the changes in life are never abrupt or large; it would be possible for you to sit down and to plan the strategy for your group. Unfortunately, managers are mortals, information is seldom complete and always inaccurate (or too much to assimilate), and the unexpected always arrives inconveniently. The situation is never seen in black and white but merely in a fog of various shades of grey. Your planning thus represents no more than the best guess you can make in the current situation; the review is when you interpret the results to deduce the emerging, successful strategy (which might not be the one you had expected). The review is not merely to fine-tune your plan, it is to evaluate the experiment and to incorporate the new, practical information which you have gathered into the creation of the next step forward; you should be prepared for radical changes.

Leadership

There is a basic problem with the style of leadership advocated in this section in that nearly every historic "Leader" one can name has had a completely different approach; Machiavelli did not advocate being a caring Protector as a means of becoming a great leader but rather that a Prince ought to be happy with "a reputation for being cruel in order to keep his subjects unified and loyal". Your situation, however, is a little different. You do not have the power to execute, nor even to banish. The workforce is rapidly gaining in sophistication as the world grows more complex. You cannot effectively control through fear, so you must try another route. You could possibly gain compliance and rule your team through edict; but you would lose their input and experience, and gain only the burdens of greater decision making. You do not have the right environment to be a despot; you gain advantage by being a team leader.

A common mistake about the image of a manager is that they must be loud, flamboyant, and a great drinker or golfer or racket player or a great something social to draw people to them. This is wrong. In any company, if you look hard enough, you will find quiet modest people who manager teams with great personal success. If you are quiet and modest, fear not; all you need is to talk clearly to the people who matter (your team) and they will hear you.

The great managers are the ones who challenge the existing complacency and who are prepared to lead their teams forward towards a personal vision. They are the ones who recognize problems, seize opportunities, and create their own future. Ultimately, they are the ones who stop to think where they want to go and then have the shameless audacity to set out.

THE IMPORTANCE OF PLANNING

Everyone knows that success depends upon having a solid business plan in place and just like any other business the utility industry is no different. However, there are times when the development of the "business plan" is lacking due to the limited input received from all parts of the organization. All too often, the Manager takes on the responsibility of developing a plan without taking the time to sit down with supervisors and other key personnel to develop the plan.

When developing the plan, it is often a good idea to look within the organization and identify your key objectives. Referring back to your "mission statement" is always a good idea. If you don't have one, this is an ideal time to develop one that will reflect your utilities goals and objectives for the community that it serves. Mission statements should be brief, to the point, and easily remembered by all employees.

Can you identify your utilities strengths and weaknesses? Again, going back to consult with other supervisors and key personnel will provide you with a terrific snapshot of how the utility is perceived by the customers. Most general managers have very limited contact with their customers when compared to the front office personnel and billing department. Often, you can identify problem areas within the organization just by listening to what those employees have to say about customer calls. A good approach to getting information is to hold a series of small group meetings with all the employees. This will not only provide you with a means of getting critical information, but it will also help to build a spirit of "team work" and help to get employees to take ownership of their role within the utility.

Identifying issues that have an impact on your utility is extremely important. These can be broken down into short statements like adequate rates, water quality, training opportunities, and employee relations. You can make the list a big as you like, but concentrating on the main issues that can be focused on for improvements
is recommended for developing a
plan.

After you have identified your strengths, weaknesses and other critical issues, you then take on the challenge of devising a plan to address those issues and setting realistic goals and time frames to make changes and improvements. For example, if you have a significant inflow/infiltration problem, it isn't practicable to think you will eliminate all of the I/I within a twelve month period. You have to develop a plan to address identifying the sources and time/expense for making subsequent repairs.

Again, when developing a plan for your utility, take the time to listen to the people around you. Given the opportunity, employees will flourish when allowed to share ideas and feel like they have a stake in developing the plan.

ORGANIZING

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ORGANIZING A TEAM

Most managers recognize the interdependence of employees or other group members and the need for cooperation to accomplish the work. A team that is communicating and functioning well has synergy; that is why people working as a team can achieve better results than individuals working alone. That does not mean, however, that productivity will automatically go up by putting a group of good performers together.

There are several conditions that must exist before an effective team can be developed.

1. The group must have a reason for working together that makes sense to the team members.
2. Team members must be mutually dependent on one another's experience, abilities, and commitment in order to accomplish mutual objectives.
3. Team members must believe in and be committed to the idea that working together as a team is preferable to working alone, thus leading to more effective decisions and improved productivity.
4. The team must be accountable as a functioning unit within a larger organizational context.
5. Team members need to understand that they will be recognized (rewarded) for their team efforts and accomplishments.

Teams function more efficiently when members of the team recognize and follow certain agreed-upon behaviors. These standards or norms are a basis for making decisions, for encouraging participation, for taking risks, and for rewarding behaviors that facilitate cooperation or resolution of conflict.

When people working together as a team follow a few basic steps listed below, communication, trust, and productivity will greatly increase among team members.

- Team members listen and pay attention to one another.
- People discuss the subject at hand and are willing to work through conflict as opposed to avoidance of conflict.
- Everyone has a chance to state his or her views.
- Members know and use problem-solving steps.
- Members are clear about group decisions and are committed to them.
- Frequent feedback is given to help members stay focused on team goals.

The lack of effective open communication among team members can lead to avoidance and/or oppression of conflict. When this happens, the team can lose its effectiveness as a group in drawing upon the knowledge, experiences, and ideas of all team members in coming up with the best solutions for accomplishing the team objectives.

Team members need to understand that conflict is a part of every group and learning to manage it will lead to more productive, satisfied team members and a greater exchange of ideas.

In order for the team to effectively function and maintain good communications, there needs to be a designated leader. The team leader may be appointed by the team members from among the group.

This leadership role can be challenging in that the leader will need to provide structure and support while still being a team member. To accomplish this task, the leadership responsibilities must be viewed differently from those of a traditional manager. Key words for describing this leadership role are guiding, stimulating, coaching, and coordinating.

Coordinating will involve improving communication and feedback among team members through improving the work environment, controlling the operational climate, and in general, indirectly doing things that help to produce a cohesive, finely tuned working team.

A successful team leader is skilled at dealing with feelings of people along with practical methods of effective problem solving. The leader needs to use a management approach that encourages team member participation in making decisions that affect the group.

The skills most needed by the team leader are: linking together individuals who can contribute, bringing clarity to objectives, building a climate that is both supportive and confronting, ensuring that work methods are satisfying and effective, and setting an environment that encourages and allows for the discussion of all relevant issues.

DELEGATION

Delegation underpins a style of management which allows your staff to use and develop their skills and knowledge to the full potential. Without delegation, you lose their full value. Delegation is primarily about entrusting your authority to others. This means that they can act and initiate independently; and that they assume responsibility *with you* for certain tasks. If something goes wrong, you remain responsible since you are the manager; the trick is to delegate in such a way that things get done but do not go (badly) wrong.

The objective of delegation is to get the job done by someone else. Not just the simple tasks of reading instructions and turning a lever, but also the decision making and changes which depend upon new information. With delegation, your staff has the authority to react to situations without referring back to you.

If you tell the janitor to empty the bins on Tuesdays and Fridays, the bins will be emptied on Tuesdays and Fridays. If the bins overflow on Wednesday, they will be emptied on Friday. If instead you said to empty the bins as often as necessary, the janitor would decide how often and adapt to special circumstances. You might suggest a regular schedule (teach the janitor a little personal time management), but by leaving the decision up to the janitor you will apply his/her local knowledge to the problem.

To enable someone else to do the job for you, you must ensure that:

- they know what you want;
- they have the authority to achieve it; and
- they know how to do it.

These all depend upon communicating clearly the nature of the task, the extent of their discretion, and the sources of relevant information and knowledge.

Delegation can only be successful if the decision-makers (your staff) have full and rapid access to the relevant information. This means that you must establish a system to enable the flow of information. This must at least include regular exchanges between your staff so that each is aware of what the others are doing. It should also include briefings by you on the information which you have received in your role as manager; since if you need to know this information to do your job, your staff will need to know also if they are to do your (delegated) job for you.

One of the main phobias about delegation is that by giving others authority, a manager loses control. This need not be the case. If you train your staff to apply the same criteria as you would yourself (by example and full explanations) then they will be exercising your control on you behalf. And since they will witness many more situations over which control may be exercised (you can't be in several places at once) then that control is exercised more diversely and more rapidly than you could exercise it by yourself. In engineering terms: if maintaining control is truly your concern, then you should distribute the control mechanisms to enable parallel and autonomous processing.

The key is to delegate gradually. If you present someone with a task which is daunting, one with which he/she does not feel able to cope, then the task will not be done and your staff will be severely demotivated. Instead you should build-up gradually; first a small task leading to a little development, then another small task which builds upon the first; when that is achieved, add

another stage; and so on. This is the difference between asking people to scale a sheer wall, and providing them with a staircase. Each task delegated should have enough complexity to stretch that member of staff - but only a little. There is a danger with "open access" that you become too involved with the task you had hoped to delegate.

Let us consider your undoubtedly high standards. When you delegate a job, it does not have to be done as well as you could do it (given time), but only as well as necessary: never judge the outcome by what you expect you would do (it is difficult to be objective about that), but rather by fitness for purpose. When you delegate a task, agree then upon the criteria and standards by which the outcome will be judged. You must enable failure. With appropriate monitoring, you should be able to catch mistakes before they are catastrophic; if not, then the failure is yours.

There is always the question of what to delegate and what to do yourself, and you must take a long term view on this: you want to delegate as much as possible to develop you staff to be as good as you are now.

The starting point is to consider the activities you used to do before you were promoted. You used to do them now someone else can do them. Tasks in which you have experience are the easiest for you to explain to others and so to train them to take over. You use your experience to ensure that the task is done well, rather than to actually perform the task yourself. In this way you gain time for your other duties and someone else becomes as good as your once were (increasing the strength of the group).

Decisions are a normal managerial function: these too should be delegated - especially if they are important to the staff. In practice, you will need to establish the boundaries of these decisions so that you can live with the outcome, but this will only take you a little time while the delegation of the remainder of the task will save you much more.

In terms of motivation for your staff, you should distribute the more mundane tasks as evenly as possible; and sprinkle the more exciting ones as widely. In general, but especially with the boring tasks, you should be careful to delegate not only the performance of the task but also its ownership. Task delegation, rather than task assignment, enables innovation. The point you need to get across is that the task may be changed, developed, upgraded, if necessary or desirable. You still need to monitor the tasks you have delegated and to continue the development of your staff to help them exercise their authority well.

There are managerial functions which you should never delegate - these are the personal/personnel ones which are often the most obvious additions to your responsibilities as you assume a managerial role. Specifically, they include: motivation, training, team-building, organization, praising, reprimanding, performance reviews, promotion.

As a manager, you have a responsibility to represent and to develop the effectiveness of your group within the company; these are tasks you can expand to fill your available time - delegation is a mechanism for creating that opportunity.

THE HUMAN FACTOR

When you are struggling with a deadline or dealing with delicate decisions, the last thing you want to deal with is "people". When the fight is really on and the battle is undecided, you want your team to act co-operatively, quickly, rationally; you do not want a disgruntled employee complaining about life, you do not want a worker who avoids work. But this is what happens, and as a manager you have to deal with it. Few "people problems" can be solved quickly, some are totally beyond your control and can only be contained; but you do have influence over many factors which affect your people and so it is your responsibility to ensure that your influence is a positive one.

You can only underestimate the impact which you personally have upon the habits and effectiveness of your group. As the leader of a team, you have the authority to sanction, encourage or restrict most aspects of their working day, and this places you in a position of power - and responsibility. Your behavior and what motivates people, because by understanding these you can adapt yourself and the work environment so that your team and the company are both enriched. Since human psychology is a vast and complex subject, we do not even pretend to explain it. Instead, we outline a simple model of behavior and a systematic approach to analyzing how you can exert your influence to help your team to work.

Consider your behavior. Consider the effect you would have if every morning after coffee you walked over to Jimmy's desk and told him what he was doing wrong. Would Jimmy feel pleased at your attention? Would he look forward to these little chats and prepare simple questions to clarify aspects of his work? Or would he develop a hatred for coffee and be busy elsewhere whenever you pass by? Of course you would never be so destructive - provided you thought about it. And you must; for many seemingly simple habits can have a huge impact upon your rapport with your team.

Take another example: suppose (as a good supportive manager) you often give public praise for independence and initiative displayed by your team, and suppose (as a busy manager) you respond abruptly to questions and interruptions; think about it, what will happen?

Probably your team will leave you alone. They will not raise problems (you will be left in the dark), they will not question your instructions (ambiguities will remain), and they will struggle on bravely (and feel unsupported). Your simple behavior may result in a quagmire of errors, misdirected activity and utter frustration. So if you do want to hear about problems tell the team so and react positively when you hear of problems in-time rather than too-late.

When thinking about motivation it is important to take the long-term view. What you need is a sustainable approach to maintain enthusiasm and commitment from your team. This is not easy; but it is essential to your effectiveness.

As the manager, you set the targets - and in selecting these targets, you have a dramatic effect upon your team's sense of achievement. If you make them too hard, the team will feel failure; if too easy, the team feels little. Ideally, you should provide a series of targets which are easily recognized as stages towards the ultimate completion of the task. Thus progress is punctuated and celebrated with small but marked achievements. If you stretch your staff, they know you know they can meet that challenge.

Recognition is about feeling appreciated. It is knowing that what you do is seen and noted, and preferably by the whole team as well as by you, the manager. In opposite terms, if people do something well and then feel it is ignored - they will not bother to do it so well next time (because "no one cares").

The feedback you give your team about their work is fundamental to their motivation. They should know what they do well (be positive), what needs improving (be constructive) and what is expected of them in the future (something to aim at). And while this is common sense, ask yourself how many on your team know these things, right now? Perhaps more importantly, for which of your team could you write these down now (try it)?

Your staff needs to know where they stand, and how they are performing against your (reasonable) expectations. You can achieve this through a structured review system, but such systems often become banal formalities with little or no communication. The best time to give feedback is when the event occurs. Since it can impact greatly, the feedback should be honest, simple, and always constructive. If in doubt, follow the simple formula of:

1. Highlight something good;
2. Point out what needs improving; and,
3. Suggest how to improve.

You must always look for something positive to say, if only to offer some recognition of the effort which has been put into the work. When talking about improvements, be specific: this is what is wrong, this is what I want/need, and this is how you should work towards it. Never say anything as unhelpful or uninformative as "do better" or "shape up" - if you cannot be specific and say how, and then keep quiet. While your team will soon realize that this is a formula, they will still enjoy the benefits of the information (and training). You must not stint in praising good work. If you do not acknowledge it, it may not be repeated simply because no one knew you approved.

The work itself should be interesting and challenging. Interesting because this makes your staff actually engage their attention; challenging because this maintains the interest and provides a sense of personal achievement when the job is done. But few managers have only interesting, challenging work to distribute: there is always the boring and mundane to be done. This is a management problem for you to solve. You must actually consider how interesting are the tasks you assign and how to deal with the boring ones. Here are two suggestions:

- Make sure that everyone (including yourself) has a share of the interesting and of the dull. This is helped by the fact that what is dull to some might be new and fascinating to others - so match tasks to people, and possibly share the worst tasks around. For instance, taking minutes in meetings is dull on a weekly basis but quite interesting/educational once every six weeks (and also heightens a sense of responsibility).
- If the task is dull perhaps the method can be changed - by the person given the task. This turns dull into challenging, adds responsibility, and might even improve the efficiency of the team.

Responsibility is the most lasting. One reason is that gaining responsibility is itself seen as an advancement which gives rise to a sense of achievement and can also improve the work itself: a multiple motivation! Assigning responsibility is a difficult judgment since if the person is not confident and capable enough, you will be held responsible for the resulting failure.

There are two types of advancement: the long-term issues of promotion, salary rises, job prospects; and the short-term issues (which you control) of increased responsibility, the acquisition of new skills, broader experience. Your team members will be looking for the former, you have to provide the latter and convince them that these are necessary (and possibly sufficient) steps for the eventual advancement they seek. As a manager, you must design the work assignment so that each member of the team feels: "I'm learning, I'm getting on".

Finally, look carefully at how you behave and whether the current situation is due to your previous inattention to the human factor: you might be the problem, and the solution.

PERSONAL TIME MANAGEMENT FOR BUSY MANAGERS

Time passes, quickly. This section looks at the basics of Personal Time Management and describes how the Manager can assume control of this basic resource.

The "Eff" words:

- Effective - having a definite or desired effect
- Efficient - productive with minimum waste or effort
- Effortless - seemingly without effort; natural, easy

Personal Time Management is about winning the "Eff" words: making them apply to you and your daily routines.

Personal Time Management is about controlling the use of your most valuable (and undervalued) resource. Consider these two questions: what would happen if you spent company money with as few safeguards as you spend company time, when was the last time you scheduled a review of your time allocation?

The absence of Personal Time Management is characterized by last minute rushes to meet deadlines, meetings which are either double booked or achieve nothing, days which seem somehow to slip unproductively by, crises which loom unexpected from nowhere. This sort of environment leads to inordinate stress and degradation of performance: it must be stopped.

Poor time management is often a symptom of over confidence: techniques which used to work with small projects and workloads are simply reused with large ones. But inefficiencies which were insignificant in the small role are ludicrous in the large. You can not drive a motor bike like a bicycle, nor can you manage a supermarket-chain like a market stall. The demands, the problems and the payoffs for increased efficiency are all larger as your responsibility grows; you must learn to apply proper techniques or be bettered by those who do. Possibly, the reason Time Management is poorly practiced is that it so seldom forms a measured part of appraisal and performance review; what many fail to foresee, however, is how intimately it is connected to aspects which do.

Personal Time Management has many facets. Most managers recognize a few, but few recognize them all. There is the simple concept of keeping a well ordered diary and the related idea of planned activity. But beyond these, it is a tool for the systematic ordering of your influence on events, it underpins many other managerial skills such as Effective Delegation and Project Planning.

Personal Time Management is a set of tools which allow you to:

- Eliminate wastage;
- Be prepared for meetings;
- Refuse excessive workloads;
- Monitor project progress;
- Allocate resource (time) appropriate to a task's importance;
- Ensure that long term projects are not neglected;
- Plan each day efficiently; and,
- Plan each week effectively and to do so simply with a little self-discipline.

Since Personal Time Management is a management process just like any other, it must be planned, monitored and regularly reviewed. In the following sections, we will examine the basic methods and functions of Personal Time Management. Since true understanding depends upon experience, you will be asked to take part by looking at aspects of your own work. If you do not have time to this right now - ask yourself: why not?

Current Practice

What this article is advocating is the adoption of certain practices which will give you greater control over the use and allocation of your primary resource: time. Before we start on the future, it is worth considering the present. This involves the simplistic task of keeping a note of how you spend your time for a suitably long period of time (say a week). I say simplistic since all you have to do is create a simple table, photocopy half-a-dozen copies and carry it around with you filling in a row every time you change activity. After one week, allocate time (start as you mean to go on) to reviewing this log.

Waste Disposal

We are not looking here to create new categories of work to enhance efficiency (that comes later) but simply to eliminate wastage in your current practice. The first step is a critical appraisal of how you spend your time and to question some of your habits. In your time log, identify periods of time which might have been better used.

There are various sources of waste. The most common are social: telephone calls, friends dropping by, conversations around the coffee machine. It would be foolish to eliminate all non-work related activity (we all need a break) but if it's a choice between chatting to Harry in the afternoon and meeting the next pay-related deadline ... Your time log will show you if this is a problem and you might like to do something about it before your boss does.

In your time log, look at each work activity and decide objectively how much time each was worth to you, and compare that with the time you actually spent on it. An afternoon spent polishing an internal memo into a Pulitzer prize winning piece of provocative prose is waste; an hour spent debating the leaving present of a colleague is waste; a minute spent sorting out the paper-clips is waste (unless relaxation). This type of activity will be reduced naturally by managing your own time since you will not allocate time to the trivial. Specifically, if you have a task to do, decide before hand how long it should take and work to that deadline - then move on to the next task.

Another common source of waste stems from delaying work which is unpleasant by finding distractions which are less important or unproductive. Check your log to see if any tasks are being delayed simply because they are dull or difficult.

Time is often wasted in changing between activities. For this reason it is useful to group similar tasks together thus avoiding the start-up delay of each. The time log will show you where these savings can be made. You may want then to initiate a routine which deals with these on a fixed but regular basis.

Doing Subordinate's Work

Having considered what complete waste is, we now turn to what is merely inappropriate. Often it is simpler to do the job yourself. Using the stamp machine to frank your own letters ensures they

leave by the next post; writing the missing summary in the latest progress report from your junior is more pleasant than sending it back (and it lets you choose the emphasis).

Large gains can be made by assigning secretarial duties to secretaries: they regularly catch the next post, they type a lot faster than you. Your subordinate should be told about the missing section and told how (and why) to slant it. If you have a task which could be done by a subordinate, use the next occasion to start training him/her to do it instead of doing it yourself - you will need to spend some time monitoring the task thereafter, but far less that in doing it yourself.

Doing the Work of Others

A major impact upon your work can be the tendency to help others with theirs. Now, in the spirit of an open and harmonious work environment it is obviously desirable that you should be willing to help out - but check your work log and decide how much time you spend on your own work and how much you spend on others'. For instance, if you spend a morning checking the grammar and spelling in the training material related to you last project, then that is waste. Publications should do the proof-reading that is their job, they are better at it than you; you should deal at the technical level.

The remaining problem is your manager. Consider what periods in your work log were used to perform tasks that your manager either repeated or simply negated by ignoring it or redefining the task, too late. Making your manager efficient is a very difficult task, but where it impinges upon your work and performance you must take the bull by the horns (or whatever) and confront the issue.

Managing your manager may seem a long way from Time Management but no one impacts upon your use of time more than your immediate superior. If a task is ill defined - seek clarification (is that a one page summary or a ten page report?). If seemingly random alterations are asked in your deliverables, ask for the reasons and next time clarify these and similar points at the beginning. If the manager is difficult, try writing a small specification for each task before beginning it and have it agreed. While you can not tactfully hold your manager to this contract if he/she has a change of mind, it will at least cause him/her to consider the issues early on, before you waste your time on false assumptions.

External Appointments

The next stage of Personal Time Management is to start taking control of your time. The first problem is appointments. Start with a simple appointments diary. In this book you will have (or at least should have) a complete list of all your known appointments for the foreseeable future. If you have omitted your regular ones (since you remember them anyway) add them now.

Your appointments constitute your interaction with other people; they are the agreed interface between your activities and those of others; they are determined by external obligation. They often fill the diary. Now, be ruthless and eliminate the unnecessary. There may be committees where you can not productively contribute or where a subordinate might be (better) able to participate. There may be long lunches which could be better run as short conference calls. There may be interviews which last three times as long as necessary because they are scheduled for a whole hour. Eliminate the wastage starting today.

The next stage is to add to your diary lists of other, personal activity which will enhance your use of the available time. Consider: what is the most important type of activity to add to your diary? No:- stop reading for a moment and really, consider.

The single most important type of activity is those which will save you time: allocate time to save time, a stitch in time saves days. And most importantly of all, always allocate time to time management: at least five minutes each and every day.

For each appointment left in the diary, consider what actions you might take to ensure that no time is wasted: plan to avoid work by being prepared. Thus, if you are going to a meeting where you will be asked to comment on some report, allocate time to read it so avoiding delays in the meeting and increasing your chances of making the right decision the first time. Consider what actions need to be done before AND what actions must be done to follow-up. Even if the latter is unclear before the event, you must still allocate time to review the outcome and to plan the resulting action. Simply mark in your diary the block of time necessary to do this and, when the time comes, do it.

Scheduling Projects

The most daunting external appointments are deadlines: often, the handover of deliverables. Do you leave the work too late? Is there commonly a final panic towards the end? Are the last few hectic hours often marred by errors? If so, use Personal Time Management.

The basic idea is that your management of personal deadlines should be achieved with exactly the same techniques you would use in a large project:

- Check the specification - are you sure that you agree on what is to be delivered;
- Break the task down into small sections so that you can estimate the time needed for each, and monitor progress; and,
- Schedule reviews of your progress (e.g. after each sub-task) so that you can respond quickly to difficulties.

Like most management ideas, this is common sense. Some people, however, refute it because in practice they find that it merely shows the lack of time for a project which must be done anyway. This is simply daft! If simple project planning and time management show that the task can not be done, then it will not be done - but by knowing at the start, you have a chance to do something about it.

An impossible deadline affects not only your success but also that of others. Suppose a product is scheduled for release too soon because you agree to deliver too early. Marketing and Sales will prepare customers to expect the product showing why they really need it - but it will not arrive. The customers will be dissatisfied or even lost, the competition will have advanced warning, and all because you agreed to do the impossible.

You can avoid this type of problem. By practicing time management, you will always have a clear understanding of how you spend your time and what time is unallocated. If a new task is thrust upon you, you can estimate whether it is practical. The project planning tells you how much time is needed and the time management tells you how much time is available.

There are four ways to deal with impossible deadlines:

- Get the deadline extended;

- Scream for more resources;
- Get the Deliverable redefined to something practical; and,
- State the position clearly so that your boss (and his/her boss) have fair warning.

If this simple approach seems unrealistic, consider the alternative. If you have an imposed, but unobtainable, deadline and you accept it; then the outcome is your assured failure. Of course, there is a fifth option: move to a company with realistic schedules.

One defense tactic is to present your superior with a current list of your obligations indicating what impact the new task will have on these, and ask him/her to assign the priorities: "I can't do them all, which should I slip?". Another tactic is to keep a data base of your time estimates and the actual time taken by each task. This will quickly develop into a source of valuable data and increase the accuracy of your planning predictions.

There is no reason why you should respond only to externally imposed deadlines. The slightly shoddy product which you hand-over after the last minute rush (and normally have returned for correction the following week) could easily have been polished if only an extra day had been available - so move your personal deadline forward and allow yourself the luxury of leisured review before the product is shipped.

Taking this a step further, the same sort of review might be applied to the product at each stage of its development so that errors and rework time are reduced. Thus by allocating time to quality review, you save time in rework; and this is all part of project planning supported and monitored by your time management.

Finally, for each activity you should estimate how much time it is worth and allocate only that amount. This critical appraisal may even suggest a different approach or method so that the time matches the task's importance. Beware of perfection, it takes too long - allocate time for "fitness for purpose", then stop.

Monitoring Staff

Your Personal Time Management also effects other people, particularly your subordinates. Planning projects means not only allocating your time but also the distribution of tasks; and this should be done in the same planned, monitored and reviewed manner as your own scheduling.

Any delegated task should be specified with an (agreed) end date. As a Manager, you are responsible for ensuring that the tasks allocated to your subordinates are completed successfully. Thus you should ensure that each task is concluded with a deliverable (for instance, a memo to confirm completion) - you make an entry in your diary to check that this has arrived. Thus, if you agree the task for Tuesday, Wednesday should have an entry in your diary to check the deliverable. This simple device allows you to monitor progress and to initiate action as necessary.

Long Term Objectives

There are many long term objectives which the good Manager must achieve, particularly with regard to the development, support and motivation of his/her work-team. Long term objectives have the problem of being important but not urgent; they do not have deadlines, they are distant and remote. For this reason, it is all too easy to ignore them in favor of the urgent and immediate. Clearly a balance must be struck.

The beauty of Time Management is that the balance can be decided objectively (without influence from immediate deadlines) and self-imposed through the use of the diary. Simply, a manager might decide that one hour a week should be devoted to personnel issues and would then allocate a regular block of time to that activity. Of course if the factory is on fire, or World War III is declared, the manager may have to re-allocate this time in a particular week - but barring such crises, this time should then become sacrosanct and always applied to the same, designated purpose.

Similarly, time may be allocated to staff development and training. So if one afternoon a month is deemed to be a suitable allocation, then simply designate the second Thursday (say) of each month and delegate the choice of speakers. The actual time spent in managing this sort of long term objective is small, but without that deliberate planning it will not be achieved.

Once you have implemented Personal Time Management, it is worth using some of that control to augment your own career. Some quiet weekend, you should sketch out your own long term objectives and plan a route to them. As you would any long term objective, allocate time to the necessary sub-tasks and monitor your progress. If you do not plan where you want to go, you are unlikely to get there.

Personal Time Management is a systematic application of common sense strategies. It requires little effort, yet it promotes efficient work practices by highlighting wastage and it leads to effective use of time by focusing it on your chosen activities. Personal Time Management does not solve your problems; it reveals them, and provides a structure to implement and monitor solutions. It enables you to take control of your own time - how you use it is then up to you.

WHAT MAKES A GOOD LEADER

A mark of a good leader is to be able to provide consistent motivation to his team encouraging them to attain excellence and quality in their performance. A good leader is always looking for ways to improve production and standards. Here are six management skills you can develop as a leader in working to create a quality effective team.

Observation
This is an important aspect that often gets neglected due the demands on a leader's time and schedule. Observation and regular visits to the work environment are a priority and should be scheduled into the calendar. Observing employees at work, the procedures, interaction and work flow is foundational to implementing adjustments to improve results. To have credibility, a leader needs to be seen and be known to be up to date with what is happening in the work place.

Monitor Employee Performance
Employee performance needs to be monitored in mutually accepted ways. Policies and procedures need to be clear. Conferencing should be on a regular basis and not just when there is a problem. Assessments and evaluations should not be merely all formality or viewed a necessary paperwork to be done and filed away. Individual and group conferencing should be undertaken not only to monitor performance, but with the expectation of on going professional development and support. There should be frequent encouragement and clear criteria for on going goals both for the group and individual.

Implementation of Professional Development Programs
A good leader evaluates weaknesses and provides training and development strategies to strengthen the weaker skills in the team.

Demonstrates Working Knowledge and Expertise
Good leadership comes from a place of strong knowledge and experience of the production and process leading to results. If a leader does not possess all the expertise and knowledge personally, then regular consultations with experts involved in the departments should be held. This is important in order to maintain an accurate and informed overall picture.

Good Decision Making
Good leadership is characterized by the ability to make good decisions. A leader considers all the different factors before making a decision. Clear firm decisions, combined with the willingness and flexibility to adapt and adjust decisions when necessary, create confidence in the leadership.

Ability to Conduct and Evaluate Research
On going review and research is vital in order to keep on the cutting edge in business. While managing the present to ensure on going excellence in product and performance, a good leader is also able to look towards the future. Conducting and evaluating research is an important way of planning and being prepared for the future. Excellent leadership is always pro active rather than reactive. By developing these six managerial skills builds a solid foundation for success.

PERSONNEL MANAGEMENT

Of the many jobs of a manager, personnel management is one of the most important. Typically, the board should only be concerned with managing the full-time general manager. That's because the manager is in charge of implementing board policies and all other employees report to this individual. However, some small districts have no full-time employees. In this case the general manager serves as a "jack-of-all trades", in charge of everything from billing to equipment maintenance. For the smallest systems, there are no employees at all; managers do it all.

B. Only One Employee

A competent full-time general manager can make your job as a board member much easier. However, for the relationship to work to its maximum effectiveness, you must understand your role as a manager. It is critical that you and your fellow board members don't micro-manage or meddle in day-to-day operations of the system. Otherwise, your valuable time is taken away from your primary job of seeing that the mission is carried out and setting policy.

In some situations, boards feel that their supervisor is not really capable of supervising the staff or carrying out the mission of the public service district. To compensate for the manager's deficiencies, your board may choose to take a more active role in the daily operations. If this is the case, there's not much sense in hiring a full-time manager.

When selecting employees for the public service district, it is critical that you get the right person for the job. There are several steps that you can follow to help insure that you make the right selection. These steps will be discussed in the following sections.

C.

D. Job Description

No one likes to write them, certainly no one likes to keep them updated, but the job description is a valuable tool. Job descriptions are fundamental tools for employees, supervisors, and the board/council. Job descriptions help employees to understand their job duties, to define the function of the position, and to describe the typical working conditions associated with the job. They help the employer stipulate the minimum performance standards required by the position as well as serving as a benchmark for measuring job performance. Job descriptions also serve as tools in helping governing bodies comply with federal regulations such as the Fair Labor Standards Act (FLSA), the Americans with Disabilities Act (ADA) and the Family Medical Leave Act (FMLA).

A job description is simply a list of responsibilities and functions that are required in a particular position. It is not a rigid measure of functions, and it consists of more than just suggested guidelines. A good job description should have provisions so that changes are always open for discussion.

If your employees do not already have job descriptions or the existing descriptions are no longer applicable or are out of date, there are several techniques that can be applied to formulate a realistic job description.

1. *Observe*. For jobs that are primarily physical in nature, watching a person perform the job will give you most of the material you need to write the job description.
2. *Question the performer*. Ask the person who is performing the job to describe the

activities that he/she is performing. This technique fleshes out what you are observing. You must know enough about the work, of course, to be able to ask appropriate questions.

3. *Question the General Manager or Chief Operator*. Work closely with the General Manager or Chief Operator, review in your mind how you view the position, what you believe the performer should be doing, and the standards that are acceptable.
4. *Make it a team project.* The employee and supervisor should work together to identify the "essential" and "marginal" functions of the job.

Now that you have gathered information, start by summarizing briefly the major purpose of the position and its role in the department. Next, list each job duty and its related tasks, starting with the duties that require the largest portion of time. A duty is defined as a distinct area of responsibility. A task is a particular work action performed to accomplish the duty. Most jobs are compromised of 4-8 duties, each of which involves several related tasks.

If at all possible, be specific about the degree of responsibility involved and the equipment or processes used. Begin each statement with an action verb such as "analyzes" or "operates." Indicate the approximate amount of working time spent on each major duty using percentages, number of hours per day, or frequency (daily, weekly, monthly, quarterly).

Briefly describe the way in which the work is assigned and will be reviewed. Indicate the kind and amount of guidance available from the supervisor, manuals, or established procedures and include in this section the specific decisions that the position is required to make and the supervisory responsibilities.

Finally, indicate the skills, knowledge, and abilities required for satisfactory performance of each task listed. Phrase the statements so they indicate the level of knowledge/skill that is required such as "must type 50 wpm" or "must be able to lift 50 pounds." Also, don't forget to include "any other duties that are assigned."

Advertise

After developing a job description for the position, you will want to advertise for applicants for the position. When developing the advertisement, you're relatively free to put what you want into an advertisement as long as gender, age, etc. aren't mentioned. You'll want to advertise as widely as possible and it may require spending money for classified advertisements in newspapers or magazines. It is important that many people see your job advertisement. This will increase your chances of finding the right person for the job.

A written advertisement is also a good idea. A written advertisement is consistent and doesn't emphasize certain aspects of the position that might occur when you're discussing the position by word of mouth. Inadvertently, your manager or a board member may stress one part of the job with one prospect but not with another. You risk setting unshared expectations about the job.

Selection Criteria

You may get several resumes from your advertisement efforts. As a result, it is important to develop some type of evaluation criteria to assist in the selection process. Selection criteria provides an opportunity for the public service district board to agree in advance on the weight to assign to formal education, years in the field, supervisory experience, size/diversity of employers

and other factors. Developing and agreeing on these criteria in advance will save a lot of time once you begin to receive resumes.

Interviews

The interview process can be a tricky one because of legal restrictions. However, these laws were developed with good intentions that help to avoid screening out women, minorities and/or the disabled.

However, the interview process does allow you to ask questions that are necessary to judge competence in job performance. You are not permitted to ask questions related to the following:

- Race, religion, national origin;
- Education other than what is specifically needed for the job in question;
- Arrest and conviction records unless you demonstrate a "business necessity";
- Sex, marital and family status;
- Physical requirements information unless it's necessary for performing a specific job; or
- Age.

If possible, have more than one person interview the candidate. This provides an opportunity for you to have two judgments about his/her fit with your job as well as two people's view of the interview itself. In addition, try to have a knowledgeable person assist with the interview process. This will help you avoid complaints and maybe even an encounter with the Equal Employment Opportunity Commission.

When conducting an interview, there are essentially two goals that you are trying to achieve: 1) finding out needed information to see if this candidate matches your job; and 2) avoiding discriminatory practices. You may find it helpful to develop a list of questions in advance.

Performance Evaluations

One of the most critical jobs is to assure that the performance of employees is evaluated – annually and in writing. Typically, board members give informal feedback to employees. This is helpful but these comments are often difficult to utilize. Feedback may fall into a few areas, such as operations but usually not in all areas of the employee's responsibilities.

Typically, the evaluation process begins with a discussion in executive session of the employee's performance. It is necessary to cover both strengths and areas that are in need of improvement. For instance, when evaluating a general manager it may be helpful to break those topic areas into categories such as operations, finances, physical facilities, customer relations, community relations and professional activities. Typically the discussion is then written up on a standard form by the chair of the board and circulated as a draft to the other board members.

After the evaluation has been finalized, the chair of the board and the general manager review the document together or you may choose to have the entire board meet with the general manager. Be careful not to make the situation intimidating for the general manager.

Annual, written evaluations are a good idea for several reasons. For instance, written records can protect the board in the instance of job actions or lawsuits. The process in general provides an opportunity for the board to evaluate the strengths of an employee and areas needing improvement. As a professional, the general manager is aware that there is always room for improvement. Rather than hearing informally from one or two verbal board members, the annual evaluation provides feedback from all members in an efficient and effective delivery system.

Keep in mind; if a general manager is on the staff of the public service district, this individual should be responsible for evaluating and managing all other employees of the public service district. The board should only be concerned with effective management of one employee, the manager.

Grievance Procedure

An "open door policy" on the part of the public service district manager is a poor and ineffective substitute for a well-planned grievance procedure. Management that waits for employees to come to them with complaints and grievances will often find a union or other group representative bringing in the complaints rather than the employees themselves.

A formal grievance procedure should be written and published with copies readily available to all employees. The first step and probably the most important step in the grievance procedure is with the immediate supervisor. At this point, it is best to handle a grievance on an informal basis without requiring a written document. The supervisor should be trained to listen to the employee and answer the employee's grievance. Grievances must be treated seriously, and the employee must be provided prompt and accurate answers. An employee who has a grievance is normally upset, and a supervisor who handles the complaint in a disinterested manner will have a more difficult problem to resolve.

After the first step of the grievance procedure, the employee should be required to place the complaint in writing. The grievance procedure should specify time limitations for the employee to initiate the grievance and the manager or supervisor to answer the grievance. The answer to a written grievance should be in writing.

At all stages, an employee's grievance should be given serious and courteous consideration and be treated in a manner that conveys to the employee that supervision and management are concerned and interested in solving his problem. Adequate investigations should be conducted during the grievance and pertinent information should be fully documented and become a part of the record. Most likely, you will find that by making a genuine effort to resolve grievances, your board will limit the number which move on to litigation.

Board Operated Systems

As stated earlier, some boards do not have full-time employees. Some consider themselves too small for a general manager and the board members operate the public service district themselves. In this situation, you may want to consider some of the following suggestions from other systems:

1. Small utility systems may need to share an employee with a neighboring system or hire the expertise of a consulting firm. Sharing an employee allows you to share the costs involved with having an employee who is responsible for testing and reporting of results.
2. A volunteer may serve the public service district as the bookkeeper. However, this position can be overwhelming when taking into account everything from the state's sunshine laws to customer relations. To avoid burnout and errors, make an effort to provide as much support as is possible (computers, software, etc.).
3. Many board members choose to divide the jobs associated with delivery of potable water through the system. This process helps to reduce duplication of efforts and neglecting essential items. This can be a tricky method of operation because it becomes difficult to differentiate between operations and governing

issues. Make a genuine effort to devote at least one meeting every couple of years to measuring the progress of the system and looking toward the future.

4. Increasingly, smaller systems are sharing services. For instance, you may consider sharing administrative services such as a single billing system and cooperative purchasing of supplies. This method will require adequate administrative and quality control but may be a method that works for your organization.

Roles and Responsibilities of District Employees

An effective and efficient staff is another critical component of a successful public service district. Although as a manager, you may only need to be concerned with the responsibilities and performance of the general manager, it may help to understand the roles of other employees.

General Manager and/or Office Manager. A manager is someone who works through other people to get the job done. A manager plans, organizes, directs and controls work through a management process. This person is charged with the responsibility of making sure that people, equipment, procedures and budgets all come together in an effort to provide water services that meet regulatory requirements and community needs.

This person, considered the supervisor, should plan how to utilize resources of the organization in order to reach goals outlined by the board; organize the resources provided for specific tasks; motivate staff to perform high quality work; and measure actual performance in relation to goals.

This person should exemplify excellent technical skills. They should be able to use knowledge, methods and equipment to perform specific jobs. People skills are also a must. The ability and judgment to work with people, motivate people and provide excellent customer service is an essential facet to an effective supervisor. Finally, the ability to understand the overall organization and the role and importance of the organization in the future of the community will help to assure that the goals of the public service district are achieved.

Plant Operator. The Water Plant Operator is responsible for the administration, operation and maintenance of the water treatment and pumping facilities. This person is charged with ensuring that an adequate supply of safe, potable water is produced for the needs of the system. Inspecting facilities and equipment on a regular basis is necessary to ensure the effective delivery of water to the community. The Operator maintains records of all activities pertaining to the production of potable water and completes and submits all necessary reports to regulatory agencies. The Water Plant Operator may be asked to recommend improvements, additions and/or specifications for major equipment and material purchases. The Plant Operator is also typically responsible for compliance with federal and state regulations pertaining to the delivery of water.

Billing Clerk. The billing clerk is responsible for calculating and mailing monthly service bills. The billing clerk normally collects payments from customers and maintains a detailed and accurate record of all charges and payments for each customer. The billing clerk also collects fees from new customers and receives fees for the installation of new taps. The billing clerk must maintain a record of receipts for each and every transaction in accordance with accepted accounting principles. This individual should be very detail oriented and highly self-motivated. Accuracy and completing tasks in a timely fashion are a must. Diplomacy, self-discipline, and strong communication skills are also needed as this position involves regular interaction with customers and features the possibility of confrontation.

Receptionist. Primarily, the receptionist greets visitors, answers incoming telephone calls, and receives and forwards messages for staff members. The receptionist also assists with a number of office duties such as typing, filing, and the mailing of monthly customer statements. This is an important position, not only as a vital link for communications within the organization, but in terms of public relations. The receptionist helps form the first impression customers develop about your system. Goodwill can be lost or gained through initial customer contact. Attention to detail and strong people skills are required for this job.

Equipment Operator. This individual needs to be proficient, experienced, and qualified in safely operating equipment such as a backhoe, tractor, and dump truck. These items are regularly used in maintaining distribution systems and for the installation of new service lines and customer taps. The ideal equipment operator is very safety conscious and must adhere to all regulations for occupational safety. This includes an excellent understanding of proper trenching procedures. The equipment operator must also be knowledgeable in the proper use of tools and in maintaining equipment as per manufacturer specifications. Proper maintenance contributes greatly to safety and helps reduce repair costs for the system. It is important that the equipment operator work well with others and possess the ability to adhere to a work schedule that is determined by the General Manager. This position involves strong organizational skills, as prior planning is required to complete a number of different tasks.

Maintenance Crew. Maintenance Crew members must be team players who are goal-oriented and willing to contribute where needed. A solid understanding of tools and construction site safety procedures are required for this position. The willingness to follow instruction and work well with others is a must. The maintenance crew member will sometimes be working in confined spaces and must be alert at all times. An understanding of water leak detection and repair methods is also required for this job.

Meter Reader. The meter reader is responsible for accurately recording the amount of water used by customers each month. This job involves personal inspection of each customer meter on a monthly basis. The meter reader must maintain an up-to-date record for each customer and transmit this data to the billing clerk in a timely fashion. In many systems, the meter reader is responsible for installing, repairing, and replacing meters. This requires strict adherence to the standards prescribed by the West Virginia Public Service Commission for the maintenance of water meters.

Conclusion

Small systems, like many of those in West Virginia, can't afford the luxury of a trial and error system. Your team needs to know the WHAT, WHY, HOW, WHO and WHEN of every job. First, its important to understand that the mission of the board is to provide water services that meet regulations and support the needs of the community.

Make sure that the board clearly understands the role of the supervisor. If at all possible, don't get caught up in the day-to-day operations of the public service district. Stay focused on the mission of the board and leave the operational facet to your general manager.

Finally, make sure that every employee has an up-to-date job description, an annual written evaluation and that they clearly understand their role and importance to the organization. No matter how small your system may be, keep up on legal issues such as public access, employee protection, protection of the disabled and record-keeping.

While some water systems still use a top down approach to management, make an effort to utilize your staff in order to deliver the best possible product in a customer friendly manner.

HIRING AND DEVELOPING PERSONNEL

Staffing and Organization

Employees are the key ingredient of your drinking water system because they participate in the community daily, make numerous decisions daily, and work as a team to accomplish the tasks at hand. How your system hires and manages its employees is a critical aspect in teamwork and managerial capacity.

Water system staffing levels depend on:

- Age and complexity of the water system;
- Maintenance needs;
- Miles of lines;
- Geological features;
- Extent of automation and growth trends; and,
- Use of outside services and planned construction projects.

The system operator is key to fulfilling the mission of the community in delivering safe drinking water to its' citizens. There are four issues that systems must deal with:

- Multiple full-time operators or back-up operators;
- Part-time operators;
- Training and certification(s) levels; and,
- Work performance and attitude.

In addition, there are five essential operator qualities that must be looked at:

- Up-to-date certifications;
- Knowledge of current drinking water standards;
- Personnel management skills;
- Knowledge of entire water system; and,
- Ability to work with others.

Maintaining a quality of work life contains multiple components such as (1) system management should provide a supportive work environment that values and encourages employees while treating them with dignity and respect and (2) establishing an environment of open communication that will empower employees and encourage them to accept responsibility and contribute to the success of the utility. Quality of Work life: Open communication of "active events" rather than "passive acceptance". Three examples of this would be:

- Actively communicates with all employees to promote a positive work environment;
- Attends staff meetings to keep informed about Quality of Work life issues; and,
- Volunteers to help with activities that promote open communications and improve everyone's work life.

Diversity

Diversity is defined as creating a climate of openness, inclusiveness, and respecting and valuing individual differences. Do your employees accept the differences of others? A good example of this would be direct observation of the employee's behaviors as shown through positive interaction with other employees, the public, and the customers they serve. A positive working environment is open, inclusive, and affirming without regard to: race, color, gender, national origin, or religion. Employees should actively seek out mutually held values with other

employees and demonstrate respect for individual differences as shown with age and disability issues.

Hiring Process

Why do we have employment laws when dealing with hiring new employees? The answer to that question is: 1) balance of power; 2) protection of employees, and 3) protection of employer.

The difference between "right to work" and "employment at will" are:

- "Employment at Will" – common-law concept that the employment relationship is generally consensual between employer and employee and may be terminated without notice or permission of either party. (WV is an "employment at will" state)
- "Right To Work" – US statute that protects employees from the requirements to join a union and pay dues to keep jobs (WV is not a "right to work" state)

Two main goals in the hiring process are: 1) hire the person who best matches the job needs, and 2) follow all applicable discrimination laws. In preparing to hire a new employee, you must establish a process that will ensure fairness in the interview, treatment, and consideration process for all involved.

To ensure a fair process:

- Document advertisements for position and procedures for accepting applications and screening qualifications;
- Create and use a detailed job description and descriptions of advertising, selection, and (later) evaluation processes;
- Use contemporary application forms with applicant certification of accuracy; and,
- Create and use same interview process for all.

Topics to cover during an interview might include the following:

- Certifications;
- Training/education;
- Past work experience;
- Scenario regarding personnel management;
- Emergency behavior examples; and,
- Past experiences working with local officials.

Evaluating and Selecting Applicants

- Determine evaluation process for selecting applicants;
- Check all applicants' reference;
- Decide if you will test applicants and make sure all testing is legally defensible and follows accepted practices; and,
- Consider using a probationary period.

Working with the operator and other operations staff is essential to promoting safe working conditions through:

- Development of a written safety policy;
- Ensuring that all employees are properly trained;
- Implementing and enforcing all safety policies;

- Investigate all accidents and injuries to determine cause and take correction actions; and,
- Ensure proper maintenance of equipment and tools.

Operator training is very important because it assures the utility that their employee is a well trained, knowledgeable operator who protects the public health and the public's investment in the water system. Introduction of the important employment concepts that are essential for managerial capacity of a utility are essential from the employer and the employee standpoint. The employer has certain obligations to their employees:

Employer Obligations
- Provide a safe working environment;
- Training for their employees for the job;
- Provide the required resources for the job; and,
- Provide timely/developmental feedback to employees.

Employer Prerogative
- Provide discipline when needed; and,
- Provide termination when needed.

Employee Obligations
- To come to work;
- To come to work on time;
- To come to work when scheduled; and,
- To do the job hired for to the best of their ability/knowledge/skills.

Employee Prerogative
- Grievance;
- EEOC; and,
- Wrongful discharge suit.

Federal Labor Laws By Number of Employees

1-14 Employees:

- Fair Labor Standards Act (FLSA) (1938)
- Immigration Reform & Control Act (IRCA) (1986)
- Employee Polygraph Protection Act (1988)
- Uniformed Services Employment & Re-employment Rights Act of 1994
- Equal Pay Act (1963)
- Consumer Credit Protection Act of (1968)
- National Labor Relations Act (NLRA) (1935)
- Labor-Management Relations Act (Taft-Hartley) (1947)
- Employee Retirement Income Security Act (ERISA (1974) (if company offers benefits)
- Uniform Guidelines of Employee Selection Procedures (1978)
- Federal Insurance Contribution's Act of 1935 (FICA) (social security)

11-14 Employees, add:

- Occupational Safety & Health Act (OSHA) (1970)

15-19 Employees, add:

- Civil Rights Act of 1964 Title VII, Civil Rights Act of 1991
- Title I, American with Disabilities Act of 1990 (ADA)

20-49 Employees, add:

- Age Discrimination in Employment Act (1967) (ADEA)
- Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA)

50 or More Employees, add:

- Family and Medical Leave Act of 1993 (FMLA)
- EEO-1 Report filed annually with EEOC if Organization is a Federal Contractor

100 or More Employees, add:

- Worker Adjustment & Retraining Notification Act of 1989 (WARN)
- EEO-1 Report filed annually with /EEOC if Organization is not a Federal Contractor

CONDUCTING JOB INTERVIEWS

So you're looking to hire a new employee for your utility. How do you separate the potential superstars from the problem children of the working world? You interview applicants thought - fully and with great care. Conducting a job interview should provide you with an understanding if a candidate will either excel or fail in your workplace. The process involves much more than reviewing his or her resume. You must have a clear picture of the qualities you're looking for and you need to find those qualities by asking the right questions. Here are seven steps that are recommended for conducting a revealing and legal interview. By taking a few common-sense measures, you can maintain control of the interview and enhance your ability to make the best hiring decision.

1. Define the Job

Above all else, clarify the job to be filled before filling it. This can be done either by a hiring committee consisting of board members with the general manager or solely by the general manager. Either way, this process of defining the job is critical. Too often this process is done in reverse and you could end up hiring a perfect candidate for a job that doesn't exist. Also, seek the input of current employees in like positions when putting together a job description for the vacancy that's to be filled. These employees know what the job will require and using them in this process helps with the development of accurate performance standards and qualifications. Be sure your hiring standards relate solely to job performance. Legally, you must be prepared to demonstrate that all standards relate to the performance of the job and that the standards do not discriminate against any candidate based on age, race, gender, religion, national origin, marital status or physical handicap. The Equal Employment Opportunity Commission enforces this requirement and provides guidelines on hiring practices. Include all pertinent details in the description, including benefits, responsibilities, working environment and opportunities for advancement.

2. Organize and Prepare

Closely examine or screen candidates before contacting them. Scrutinize their resumes and be sure to check references. You want to hire the candidate who is the person that he or she truly is, not how he or she appears. With this information, you may be able to begin disqualifying those who are unfit or simply not suited for the job. If all the facts pan out, contact the qualified candidates by phone and set up interviews. Before meeting the candidate, make sure he or she is serious about a job change and ask them to fill out an application. Like any meeting, a clear agenda for the interview increases your efficiency and effectiveness. The center of each interview is your question period. Write out specific questions and type them for easy reference. Spend time on developing this question list and try to seek input from current employees. Note any concerns with the candidate's resume and when talking with the candidate's references, and be sure to follow up on these concerns during the interview. As the interviewer, you should have the job description, your questions and a notepad in front of you. In addition, have an employee handbook available for the candidate.

3. Be Courteous

Choose a quiet setting for the interview and make sure the candidate won't be facing any bright lights or the direct blast from an air conditioner or heater vent. Try to make sure that the chair for the candidate isn't too low or too high. To minimize distractions, ask that your calls be held and that there be no interruptions. When the applicant first arrives, greet him or her with a smile and enthusiasm. Offer a sincere compliment about a strong point on the resume or provide a positive

comment made by a reference. Offer the candidate a cup of coffee, a soft drink, or a glass of water.

4. Establish Control

Because you have initiated the meeting, you're expected to chair it. You are in the driver's seat. The first step is to lead smoothly from casual conversation into the interview. Provide a brief summary of what's to he accomplished today and introduce anyone else who might be asking questions. Also, describe what will follow in terms of a timeline for filling the job. Briefly describe your role in the utility as well as the position for which the candidate is being interviewed.

5. Ask the Questions

Before the interview was scheduled, the candidate's qualifications should have been reviewed and deemed favorable for an appointment. Now it's time to get serious and closely examine personality and attitude. Is this person a team player or is this person someone who has to be the star of the show? Express any concerns that surfaced when reading the candidate's resume and or when talking with their references. You have to have answers for any concerns about this candidate. Although this is the longest segment
of the interview, twenty to thirty minutes should be adequate if your questions are concise and if concise answers are provided. The interviewer's questions should cover two areas in particular: the candidate's experience and knowledge of utility operations, and his or her personal qualities. Seek whatever additional information that's necessary about the candidate's background, skills, education, credentials and accomplishments as well as job performance strengths and weaknesses. Be sure to ask about the candidate's interests and ambitions. If someone is not goal-oriented, then they're not likely to accomplish much for your utility.

6. Promote Your Utility

You will want to sell the best candidate on the job that you have available. Begin by telling the candidate how you feel about the job and don't be afraid to do some promotion. "We feel we have an outstanding opportunity. Whoever assumes this responsibility will be important to our overall success. That's why we're determined to hire the right candidate." Be sure to read from the written job description during this phase of the interview. This is a good time to summarize the history and growth of the utility and its organizational structure as it relates to the candidate's prospective job. Don't oversell or exaggerate, and never make promises that can't be kept, but still be enthusiastic. Remember, false expectations are a major cause of employee dissatisfaction. It's also a good idea to reserve some details of the job to elicit the candidate's further interest in any subsequent interviews if one is needed.

7. Answers Questions

In this final step, the candidate has the opportunity to ask questions about the job. An aggressive candidate will have tried to assume control earlier in the interview. For the sake of time, don't allow that to happen. Reduce the candidate's questions to a minimum by saving them for the end because many questions will have been answered during the flow of the interview. Once the applicant question period begins, let the candidate know that this is his or her opportunity. By now, you have a good sense as to whether the candidate should he invited back for subsequent interviews or possibly be extended an offer of employment.

Following this approach, you should be able to accomplish your purpose relatively quickly. In about a half an hour, you will gain insight into each candidate while selling the opportunity to encourage the best candidates. It's a good habit to summarize your notes immediately after the

interview while all the details are fresh in your mind. In evaluating the candidate, don't allow just one isolated "odd-ball" response to outweigh an otherwise solid interview.

Always send interviewees a letter of thanks, even if it's to announce that they are no longer under employment consideration. Finally, involve others in the hiring decision. Make sure they meet the outstanding candidates. Because their futures will be affected along with your own, ask for their opinions. Seek consensus as it goes along way toward fostering teamwork and in making the right hiring decision.

NECESSARY STEPS TO DEVELOP THE BEST POSSIBLE STAFF

Systems must realize that an adequate, well-trained staff is necessary both to provide cost-effective Operations and Maintenance (O&M) of their facilities and to ensure compliance with all regulatory requirements. This section will provide some guidelines to help determine the necessary steps to develop the best possible staff.

Developing an Adequate Staffing Plan

Generally, staffing is the largest component of an O&M budget for a wastewater facility. For small communities, these costs comprise the main budget component. Systems should not try to reduce O&M direct labor costs as a way of cutting budgets. For example, it may be that large amounts of overtime pay are being spent on existing staff. Hiring additional personnel may be a more cost-effective approach to spending personnel dollars. Another factor involved in determining staffing cost effectiveness is the use of outside contractors to perform certain O&M functions. A community might consider using contractors for functions such as major maintenance or overhaul.

Development of a staffing plan will not only ensure cost effectiveness, but will also help systems meet their responsibility to ensure that facilities comply with state and federal regulations. Inadequate or poorly trained staff inevitably leads to non-compliance problems and potential fines. In addition to complying with appropriate regulations, systems also have a responsibility to the citizens of their communities to provide uninterrupted utility service. Protection of the environment is the key consideration in the management of a utility system. An adequate staffing plan is essential to achieving that goal. Here are the steps for preparing a staffing plan:

1. Develop an organizational chart. It is important to have a clear organizational chart to determine how utilities need to be managed. The current trend is to separate water and wastewater utilities from other public works to improve performance, and to enable technical personnel to develop comprehensive expertise in their areas of responsibility. To effectively implement this organizational approach, local officials need adequate information about specific job responsibilities to then determine the number and type of personnel required. The product of this first step in developing a staffing plan is an organizational chart showing all lines of supervision and authority, all filled and unfilled positions, and an approximation of all needed, but as yet unauthorized positions.
2. Conduct a task analysis. A detailed task analysis will help determine how many workers are needed and the level of experience and expertise necessary for each wastewater facility job. Begin by identifying all O&M tasks that must be accomplished to ensure adequate performance by the facility. Include tasks that are currently being accomplished, as well as those that should be done but might not be due to lack of time, talent, or other resources. The task list should reflect all routine O&M tasks required for the entire year. Some tasks may be daily, while others might be performed weekly, monthly, or even yearly. To develop a comprehensive task list that truly reflects the needs of the facility, an experienced supervisor familiar with the facility should be involved at all stages of the task analysis. The product of this second step in developing a staffing plan is a comprehensive task list, organized by unit processes.
3. Determine staffing requirements. The next step is to review the task list and

estimate the time each task normally requires. It is necessary to compute the total number of person-hours per task, per technical skill, per year required to provide adequate O&M of the facility. Once that number is determined, it may be divided by the total number of hours that each worker is available per year, taking into account vacations, holidays, etc. In this way it will be possible to derive a number that approximates the personnel hours needed to provide adequate O&M for the facilities in question. The product of this third step in developing a staffing plan is a break out of required staffing hours, by skill and by task.

4. Create job descriptions. Once the estimated number of staff hours is determined, the organizational chart should be appropriately modified and each staff member's responsibilities redefined. Detailed job descriptions for each position identified on the chart should be prepared or old job descriptions should be modified and updated. Remember to get input from the people actually doing the job. Job descriptions should include areas of responsibility, summaries of required tasks, subordinates supervised, and supervisors to whom reports are made. The product of this fourth step in developing a staffing plan is an updated set of written job descriptions.
5. Implement staffing changes. After approving the staffing changes recommended by steps 3 and 4, the O&M budget must be modified appropriately. In addition to follow-up budget monitoring relating to these staff changes, management should periodically assess them in terms of improved efficiency and performance of the utility's O&M. The product of this final step in developing a staffing plan is a new written staffing plan and corresponding budget.

Plant Coverage

Plant coverage guidelines call for enough time for the operators to collect, analyze, and record required samples. The plant should be staffed by a full-time Chief Operator.

Certification and Training

The "Grades" of certification are divided into the following levels: 1, 2, 3, and 4. Grade 1 is the lowest level of certification and applies primarily to the smallest plants. Education requirements vary depending upon Grade. The minimum education required is High School Diploma or High School Equivalency. Classroom training also varies as a function of Grade.

All applicants must have hands-on operating experience and must have his/her actual operating experience verified. Applications with the necessary documentation are sent to the New York Water Environment Association (NYWEA) and also filed with the NYSDEC Regional Offices and for water operators sent to County Health Department where appropriate.

All certified wastewater operators are required to renew their certificates every five (5) years. Treatment technologies are changing and operators need to keep abreast with the latest operational approaches. Operators are required to attend seminars and obtain between 20 and 80 training contact hours. Failure to renew means that the certificate has expired and that the operator is not certified. If the Chief Operator's certificate has expired, he/she is not certified and the plant may not be under responsible supervision. In a well-run facility, good training will result in a substantial payback. Local officials need to vigorously support continuing education to comply with the regulations. Certified operators

generally do a better job. Annual budgets should include line items for certification training (when appropriate) and for renewal training. Work plans and schedules should allow for time to attend training.

Regulations provide for the suspension and/or revocation of operator certificates if the operator was negligent, or practiced fraud or deceit in the performance of his/her duties. The operators are expected to keep up on maintenance and routine sludge removal. Local officials have to financially support these activities. Falsification of data and discharge monitoring reports is very serious and criminal.

Additional Training Needs

In addition to ensuring compliance with certification regulations, a comprehensive training program for wastewater operators will provide other significant benefits for a local government. A well-trained staff is essential for efficient utility O&M. Good training will result in a substantial payback over the years in terms of well-run facilities. Far-sighted local officials will make sure that O&M budgets provide adequate funds for staff to go to the best training available. This may mean sending staff to off-site training events, paying the cost of course registration as well as travel expenses, or having staff attend training programs during working hours and directing other personnel to fill in during that time.

Another training option is to contract on-site training customized to the individual wastewater facility. Not all training needed is technical in nature. Training programs relating to management, supervision, and other important skills, such as effective report writing and use of the computer, are also important in developing a more efficient and productive staff.

If the staff size is sufficiently large, it may be a good idea to designate a training coordinator. This individual can determine staff training needs and watch for appropriate training opportunities or courses. The training coordinator can schedule employees for off-site training, set up on-site training classes, and monitor the training budget. The coordinator should also evaluate the training programs and determine which ones are most effective in improving staff performance. The individual coordinating training should have some technical experience in water or wastewater treatment.

TIPS FOR EVALUATING EMPLOYEES

It's a task that all too often is overlooked by rural water system managers. I'm talking about the regular evaluation of employees. Many supervisors readily confess to me that it's one aspect of the job that they simply don't feel comfortable performing. The usual response is that they are viewing the evaluation process the wrong way. Rather than something to be dreaded, it should be considered to be beneficial for both the employee and the system alike. It has been observed that some managers are simply scared of making employees mad and are therefore fearful of conflict and confrontation. By failing to fulfill the duties of a manager and not conducting evaluations, managers are really undermining the system. Without evaluations and the identification of areas needing improvement, the development of an employee is hindered. A form of staff stagnation can result. In such a scenario there are few incentives for improvement and ultimately, morale can and will suffer.

To state it very plainly, those who adhere to a management style of avoidance are in the wrong line of work. The regular evaluation of employees is critical. Periodic, constructive feedback permits an employee the opportunity to adjust his or her performance to meet the system's goals and objectives. If merit raises are ever to be given, formal written evaluations are a must. It's been my humble opinion that the ultimate value of the employee rests with his or her ability to work as a member of a team, no matter how small, to achieve the overall goals of the utility.

When considering these issues, the following main areas may be used to evaluate performance:

- Accomplishments;
- Technical competence;
- Communications - verbal, written;
- Organization;
- Leadership;
- Safety and Housekeeping;
- Strengths and Weaknesses; and,
- Developmental Potential.

If a more comprehensive evaluation is desired, listed below are some specific areas to be considered when conducting evaluations:

Team Participation

- Balances team and individual responsibilities;
- Displays openness to other views;
- Receives and provides feedback; and,
- Contributes to a positive team atmosphere.

Quantity

- Completes work in a timely manner; and,
- Achieves established goals.

Quality

- Demonstrates accuracy and thoroughness;
- Displays a commitment to excellence;
- Looks for ways to improve and promote quality;
- Applies feedback to improve performance; and,

- Monitors own work to ensure quality.

Problem Solving
- Identifies problems in a timely manner;
- Gathers and analyzes information skillfully;
- Develops alternative solutions; and,
- Works well in group-problem solving situations.

Planning and Organization
- Prioritizes and plans work activities;
- Uses time efficiently;
- Plans for additional resources; and,
- Sets goals and objectives.

Organization Support
- Follows policies and procedures;
- Completes administrative tasks correctly and on time; and,
- Supports the organization goals and values.

Job Knowledge
- Competent in the required job skills and knowledge;
- Exhibits ability to learn and apply new skills;
- Keeps abreast of regulatory requirements; and,
- Requires minimal supervision.

Initiative
- Volunteers readily; and,
- Undertakes self-development activities.

Dependability
- Responds to requests for service and assistance;
- Follows instructions and responds to management direction;
- Takes responsibility for own actions;
- Commits to doing the best job possible; and,
- Meets attendance and punctuality guidelines.

Customer Service
- Displays courtesy and sensitivity;
- Meets commitments;
- Responds to customer needs; and,
- Manages difficult or emotional customer situations.

Cooperation
- Establishes and maintains effective relations;
- Displays positive outlook and pleasant manner;
- Offers assistance and support to co-workers;
- Works actively to resolve conflicts; and,
- Works cooperatively in group situations.

Communications

- Expresses ideas and thoughts verbally;
- Expresses ideas and thoughts in written form;
- Exhibits good listening and comprehension; and,
- Selects and uses the appropriate communication methods.

Again, the regular written evaluation of staff members is essential to the long-term viability of a utility. This process needs to be a part of any progressive professional work environment. It’s the way business should be co

EMPLOYEE HANDBOOKS

What is an employee handbook and why do we need one?
The answer to this question is: 1) it lets employees know what is expected of them, 2) it sets the general guidelines of the employment relationship, and 3) it needs to be updated on an annual basis. Should my utility have an employee handbook? The answer is "YES". The handbook applies equally to all employees and can be a valuable piece of evidence in a lawsuit. It also is a well-written handbook which is a powerful tool for the utility and is a useful guidance to an employer's policies and procedures.

What goes into an employee handbook?
This can differ with handbooks, but below are some suggestions that could be used:

- A clear statement about the "at will" employment relationship;
- Accepting employment = agreement to conform to the rules and regulations of the employer;
- A disclaimer concerning oral or written statements contrary to what is in the handbook;
- The handbook does not create a contract between employer and employee, but serves as a set of guidelines for employees to follow;
- Is proof that the employee received the handbook and that they acknowledge the content of the handbook;
- Lists the conditions of employment; and,
- And anything else pertinent to the policies and procedures of the utility.

Termination of an Employee – The handbook need to specify the policy for termination of an employee and needs to be followed to the tee. This is important in that more lawsuits are filed for wrongful termination because the procedures listed in the employee handbook weren't followed exactly. This policy could contain the following:

Pre-termination Evaluation:

- Progressive discipline procedure in place;
- Termination Process in place;
- Documentation supports termination action;
- Potential of lawsuit or discrimination claim; and,
- Supported by solid facts and consistent with prior actions.

Termination Meeting:

- Two employer representatives are present;
- Give explanation/reason for termination;
- Explain benefits due/being withheld/final paycheck;
- Let employee respond; and,
- Document meeting.

Employee Handbooks are a Wise Business Practice
Every water and wastewater utility should have an employee handbook that explains and outlines policies to staff members. Not only should the handbook inform employees about policies and procedures, it should also communicate expected standards of performance and conduct. As a practical matter, having employee handbooks can prove invaluable in today's legal realm where the inconsistent enforcement of policies can result in discrimination lawsuits.

A well-designed handbook can have a positive influence on morale. It can also introduce new employees to your utility and its mission. Ideally, the handbook should help bring about a consistency of practice that will promote fairness. When there are no written policies, managers are left with an unprofessional 'learn as you go' type of management system. This can be risky at best. There are few issues more destructive to the work place than an employee's belief that management decisions are purely subjective and based on situational ethics depending upon who is affected. The uneven application of rules never promotes unity and teamwork.

An employee handbook should serve as a reference guide to help managers and supervisors take the appropriate actions for specific situations regardless to whom it affects. Without a handbook to rely on, managers can be left to their own reasoning. This can often lead to misinformed and inconsistent actions. Hence, possible illegal decision-making can follow and this is always bad for business.

Above all, a handbook should clearly state policies for hiring and it must include policies against harassment and discrimination. Employee safety should also be prominently addressed in the handbook. Job descriptions should also be included. The handbook should also clearly spell-out disciplinary measures and the steps leading to termination. While state and federal laws sometimes require that certain policies and procedures be posted on employee bulletin boards, the handbook should be presented every staff member. Distributing the handbook to all employees ensures that a utility's most important standards were made available to every staff member. It also allows employees to have their own reference when questions might arise and thus prove to be a time saving document.

There is no single way to write a handbook. The best employee handbooks are organized logically, with the policies grouped into sections. The pages should be numbered, and there should be a table of contents that allows employees to find specific areas with ease. If your utility does not currently have an employee handbook, you can contact West Virginia Rural Water Association and members of our staff will assist you and provide examples from other utilities to help serve as a guide.

Once your handbook is completed, the manager should take steps to introduce the handbook to employees in a non-threatening manner. Staff members might feel overwhelmed when a set of "rules" is handed to them. I would recommend introducing the document at a staff meeting and then follow this initial group meeting with individual conferences with each staff member. Managers should explain that the handbook is documenting the policies that the utility has always had.

It is critically important the handbook include an employee acknowledgement form. Each staff member should sign and return this form for the employee's personnel file. The form must have an acknowledgement that the employee has read the handbook and agrees to adhere to the policies as stated in the document. The importance of this acknowledgement cannot be stressed enough, especially if an employee matter is taken into litigation. With an employee handbook, managers will have another effective tool for communicating with staff and for protecting the utility when a bad hiring decision has been made. Remember, an employee handbook is a smart management decision.

JOB DESCRIPTIONS

Job descriptions are the building block of organizations. The primary objective of a job description is to help employees and supervisors reach a mutual understanding about important details of a job in order to avoid future problems. This publication discusses the need for job descriptions, how to prepare them, and how to make use of them for more effective human resource management. In addition, some examples of job descriptions for positions in the milking center are included. Job descriptions should never be considered final; they should be open to changes and should be reviewed at least once per year by both employee and supervisor.

There are many reasons for using good job descriptions—some of the most important include the following:

1. **Organization.** The job description helps people understand their responsibilities and how their work contributes to the overall mission of the business.
2. **Training.** It serves as a useful tool for training purposes because it lists the specific tasks that make up the job.
3. **Recruitment.** Clear job descriptions promote an understanding between the employer and the prospective employee. You are more likely to hire the right person if both of you clearly understand the job.
4. **Evaluation.** Employer and employee can compare actual job performance to the expectations outlined in the job description. This helps you recognize a job well done or a need for retraining or discipline.
5. **Defense.** In the unfortunate event that you must terminate an employee for poor performance, the job description gives you a basis for defending your decision.

Job descriptions are really not difficult to write. The best way to begin is by writing your own. This will get you thinking about your responsibilities and how you fit into the organization. It will also help you prepare for questions that your employees might have. Next, take some time to sit down with your current employees and help them to begin writing their job descriptions. Make sure that you explain why you need to develop job descriptions and how you expect employees to benefit from them as well. Your employees might have ideas about parts of their jobs that you might not have thought to include. Finally, you will need to review and make changes to the job descriptions. For new positions you will need to write the job description from scratch. Generally, keep descriptions brief and to the point, but don't leave out important information. Most job descriptions should easily fit on one page. Your goal is to provide a clear picture of the job so that you and your employee will fully understand each other's expectations. A good job description will include the following:

- **Job title.** The job title should accurately describe the job. For example, do not call a job that involves only milking a herdsman position.
- **Summary.** This is a concise definition of the jobs major responsibilities, where, and when it is performed. You might use the summary when advertising the position.
- **Qualifications.** A description of any experience, training, or education that is necessary to perform the job. Also, any physical characteristics that are essential to perform the job, such as the ability to lift and carry a certain weight. Be sure to avoid statements that might be discriminatory on grounds of race, gender, age, or national origin. Be aware that there are some jobs that young people are not legally allowed to do.
- **Duties or Tasks.** This is the list of all activities that the person will perform. The number of different duties depends on how specialized workers' roles are. Most

employers add at the end of the list “other duties as assigned by supervisor” as a way of including those activities that are not routine. It may be helpful to include the approximate percentage of the worker’s time that each duty will require.

- **Work relationships**. All workers need to know where they fit in the organization. The work relationship section should clearly define who the worker’s supervisor is and how the worker’s position relates to other positions. Be sure that each position only has one supervisor. Job descriptions relate to the staff organization chart—each position that appears on the organization chart should have a job description associated with it. The following two categories are optional. If you use them, don’t be so specific that no changes can be made in the future.
- **Compensation and Benefits.** Include in this section all compensation that is offered. An hourly wage range, insurance, vacation, sick leave, and so on should be clearly stated.
- **Work schedule.** Define work hours as much as possible. Define overtime policy if one applies. If work hours vary with the seasons, make that clear in the description.

Job descriptions are an essential part of the employee-recruitment process. In today’s competitive labor market, water systems need to communicate the image of a well-managed and organized business. Well-constructed job descriptions show that management is aware of specific labor needs and the qualifications and skills that a successful candidate will possess. Job descriptions spell out the specific duties that are required of employees and help candidates to decide if the job will be a good fit for them.

Job descriptions help the manager make effective selections. With the required qualifications and duties clearly specified in the job description, managers can more objectively select candidates based on their potential for job success, rather than on personality traits. Once a candidate is selected, the job description serves as a guide to the skills and knowledge that the new employee will need to perform the job. Those skills that the employee already possesses should be refined and applied in the new position, while skills or knowledge that the employee lacks can be acquired through training.

First, let's look at some terms. A **job** is a collection of tasks and responsibilities that an employee is responsible to conduct. Jobs have titles. A **task** is a typically defined as a unit of work, that is, a set of activities needed to produce some result, e.g., vacuuming a carpet, writing a memo, sorting the mail, etc. Complex positions in the organization may include a large number of tasks, which are sometimes referred to as **functions**. **Job descriptions** are lists of the general tasks, or functions, and responsibilities of a position. Typically, they also include to whom the position reports, specifications such as the qualifications needed by the person in the job, salary range for the position, etc. Job descriptions are usually developed by conducting a **job analysis**, which includes examining the tasks and sequences of tasks necessary to perform the job. The analysis looks at the areas of knowledge and skills needed by the job. Note that a **role** is the set of responsibilities or expected results associated with a job. A job usually includes several roles.

Typically, job descriptions are used especially for advertising to fill an open position, determining compensation and as a basis for performance reviews. Not everyone believes that job descriptions are highly useful. The cornerstone to any employment decision begins with job analysis. Job analysis is the most basic activity in human resource management. Accurate information on all jobs is necessary to efficiently direct and/or control the operations of a small business.

Competition and equal employment opportunity legislation has made job analysis a mandatory organizational consideration for small businesses. Because human resources represent the largest cost item for most small businesses, managers must have current and systematized information on all jobs in order to produce products and services efficiently. The myriad of laws, guidelines, and court decisions concerning equal employment opportunity make job analysis necessary. Small businesses have been quite vulnerable on the issue of discrimination in employment practices. One way to defend employment practices is to conduct job analysis and prepare job descriptions.

Job descriptions are the most visible output from job analysis. Comprehensive job descriptions developed from job analysis are used in selection, training, performance appraisal, and compensation. There are many formats used in preparing job descriptions.

Job Analysis

Job analysis is an in-depth study of a job and provides information for job descriptions. The job analyst will gather information about jobs through interviewing employees, observing performance of certain tasks, asking employees to fill out questionnaires and worksheets, and collecting information about a job from secondary sources such as the *Dictionary of Occupational* Titles.

The job analyst will write-up the results of the analysis and review them with the job incumbent. The documentation is then presented to the incumbent's supervisor for review (often the incumbent's supervisor is the job analyst.) The supervisor may add, delete or modify duties, knowledge, skills, abilities, and other characteristics. After supervisory approval is obtained, the documentation is forwarded through channels for final approval. A signed and dated job description is then prepared. This job description becomes the official record for this particular job.

Role of Job Incumbent

The job incumbent has an important role in this process. The following suggestions should help incumbents assist the job analyst:

- Spend some time thinking about the job.
- Make notes, or keep a diary of work related activities;
- At the outset fully explain the incumbents' concept of the job to the analyst;
- Focus on the facts - do not overstate or understate duties knowledge, skills, abilities, and other characteristics;
- Refrain from side issues. The analyst is only concerned with the job itself. Job performance, wages, complaints, relationships with co-workers, etc., are not relevant to this activity;
- Remember that the incumbents' input is critical; however, establishing the boundaries of the job is a management decision; and
- Be aware that there will be no adverse consequences from job analysis. For example, no person's salary will be reduced and no person's job will be eliminated. The analyst may recommend changes in title or other realignments, subject to management decision.

Definitions

The following is a list of commonly used job analysis terms.

- Job duty - a single specific task.
- Knowledge - a body of information applied directly to the performance of a duty.

- Skill - a present, observable competence to perform a learned activity.
- Ability - a present competence to perform an observable behavior or a behavior that results in an observable product.
- Physical characteristic - the physical attributes employees must have in order to perform job duties; unaided or with the assistance of a reasonable accommodation.
- Credentials and Experience - the minimal acceptable level of education, experience, and certifications necessary for employment.
- Other Characteristics - duties, knowledge, skills, and abilities that do not have a logical place in the job description.

Writing Style in Job Descriptions

Job descriptions should be written in brief and clear sentences. The basic structure for sentences in a job description should be "implied subject/verb/object/explanatory phrase." It is best to use action verbs like "types" and "files."

STANDARD OPERATING PROCEDURES

A **Standard Operating Procedure (SOP)** is a set of instructions or steps someone follows to complete a job safely, with no adverse impact on the environment (and which meets regulatory compliance standards), and in a way that maximizes operational and production requirements. Write SOPs for any processes an individual or group performs: unloading raw materials, manufacturing products, shutting down an operation, repairing a faulty electrical circuit, and thousands of other workplace activities.

Write different SOPs for people who perform jobs by themselves, people who work together on a job, and people who supervise other people doing a job. The primary audience for an SOP, however, is the person who will perform a particular job. Consider such factors as the age, education, knowledge, skills, experience and training of a person who will perform a job, and the "social culture" or work history within which the individual works. Some work cultures disdain SOPs so you must work to overcome rejection.

SOPs also can be used by managers, government safety inspectors, environmental regulators, lawyers, engineers, planners, vendors, contractors and customers. Sometimes the same SOP material is used to write a description of how a job is done—a process—which can be useful if a company representative must explain operations to the media and public.

Ideally, SOPs should be written before a job is begun. Test SOPs before putting them into final application. Revise SOPs after an on-the-job trial. Also revise SOPs when any changes or modifications are made to equipment, machinery, buildings or other structures, or procedures within the immediate work area that might affect performance of a job or the "environment" in which it is performed.

You can't write SOPs for every job overnight, so set priorities. Write SOPs when new equipment or processes create new work situations. Write or rewrite SOPs when new information suggests benefits from modifying work practices to improve performance. Accident investigations might show you that procedural, safety and environmental guidelines are insufficient, incomplete, or even missing for certain jobs or parts of jobs.

Systematically update all safety and environmental guidelines by asking workers to evaluate existing SOPs, work practice guidelines and other documents that contain work, safety and environment guidelines. Then rank these jobs as to which should be revised first through last. These procedures could be revised, perhaps by the groups that ranked them.

SOP writers often don't know how long an SOP should be. Sometimes writers are pressured by operations supervisors to "make it short" rather than comprehensive. Clearly these supervisors don't understand the purposes and audiences an SOP serves.

SOPs can be either long, short or both. Because SOPs are used for a variety of reasons and audiences, they first must be comprehensive, which means they are as long as necessary to cover a job. For long SOPs or for jobs performed infrequently, it pays to keep the long-form SOP handy. Once an employee is familiar with a process, he or she will most likely be able to perform a series of short SOP steps from memory. These steps can be written as a short-form SOP. If someone is going to use a short-form SOP, it should be prepared after a full long-form SOP has been tested and approved and should be handed out after an employee has passed the appropriate training.

- Keep in mind that the average person is uncomfortable following a long list of steps for the following reasons:
- A long list looks formidable, which makes the task daunting and tedious for many people who then don't want to perform the steps.
- A long list is difficult for your eyes to follow. You forget where you are on the list and forgetting leads to mistakes.
- A long list scares people and makes them nervous or anxious to "get it over with."
- A long list can hide steps that should be done with caution.
- A long list is difficult for writers to write while ensuring that the step sequence is clear.

The solution to SOPs that involve a long list of steps is to break the steps into logical sections of about 10 steps per section, such as "Getting ready for the process," "Initial steps," "Final steps."

Most importantly, SOPs should be reviewed by several people qualified to evaluate the SOP in terms of its completeness and clarity of safety, environmental and operational components.

Write SOPs for the following reasons:

1. To provide individuals who perform operations with all the safety, health, environmental and operational information required to perform a job properly;
2. To ensure that operations are done consistently to maintain quality control of processes and products;
3. To ensure that processes continue and are completed on a prescribed schedule;
4. To ensure that no failures occur in manufacturing and other processes that would harm employees or anyone in the surrounding community;
5. To ensure that approved procedures are followed in compliance with company and government regulations;
6. To serve as a training document for teaching users about a process;
7. To serve as a historical record of the how, why and when of steps in a process for use when modifications are made to that process and when a SOP must be revised; and,
8. To serve as an explanation of steps in a process that can be reviewed in incident investigations that seek to improve safety practices and operating conditions.

What should be included in a standard operating procedure (SOP)?
Here are suggestions for what to include in an SOP. Be sure to modify as necessary. Use an organization that favors simplicity and ease of reading.

1. Write a title (with a descriptive verb) that defines the purpose of the SOP. Include the word "safety" in the title, if applicable.

2. Use document reference numbers and revision dates on the title or cover page and a second page such as the table of contents or first page of text.

3. Identify general and specific points of activity for which an SOP has been written.

4. State the purpose of the SOP including the specific audience (user) in one or two sentences. Include information about process and regulatory standards, and both desirable and undesirable consequences.

5. Write a "scope" statement that tells what related subjects the SOP will not cover if there is any chance someone will be confused and make a mistake. Use scope statements for two reasons: to focus your attention as a writer and to clarify things for a reader. Many SOPs do not require scope statements, but consider the value of one before dismissing it as too much trouble to write.

6. List by category, any items or tools required for following the SOP whenever they apply. Think of this list as being a "tools and parts kit" for doing a job. Use general terms for common tools and equipment. For example, instead of listing every tool, a chemist or technician might simply list "gas cylinder tools." Add other categories or subcategories as desired. Sometimes a table instead of a paragraph is an appropriate format for this information.

7. Give an overview of the steps in the SOP that describes the process in terms of its major functions. Include anticipated safety, health, environmental and operational results.

8. Describe the machinery, mechanism, processing system and major components. Complete operating instructions contain overall descriptions of the major system and its components so that readers can orient themselves to the system as a whole and to its major parts.

9. Define terms and concepts. If the SOP contains terms and concepts that readers may be unfamiliar with, define these in their own paragraph so that readers (1) know that there are unusual words or concepts, and (2) can find them easily for use when needed. A long list of terms may fit better in a glossary at the beginning of a document. If you decide that a simple list of terms and definitions is better, include the list within the write-up, perhaps right before the list of steps to be performed.

10. Place safety warnings, cautions and notes prominently within the SOP before the actual step to be described. Never place safety items at the end of a step. Depending on the SOP, a writer might include an overall warning or caution that describes the general safety concerns. This should be placed at the beginning of an SOP where it is the first thing read after the title on the first page of text. If more than one safety warning, caution or note exists, list them in boldface type at the beginning of the SOP. The purpose of placing the cautions first is to alert the reader to read the warnings first. Often a page of safety cautions appears immediately after the title page and before the first page of text. Write warnings and cautions in clear sentence form. If there are only one or two warnings, these might be best placed at the top of the first page of text rather than on a separate page. The goal is to place warnings where the reader will read them. Sometimes this placement is determined by the size of the final printed version of an SOP. It is easy to place several warnings on an 8-1/2"x11" sheet of paper, but not so easy to do on a pocket-size handbook. Write Notes to provide people with information that can help them satisfy safety, health, environmental and operational procedural requirements. For example, if it is permissible to use an extension cord of a certain length, this information should be stated in the SOP.

11. List and explain the process steps in sequential order in which an SOP user should perform the steps.

12. If two steps must be done at once, explain them in a sentence that clearly says so. You may wish to highlight (with italics or underlining) the first part to differentiate it from the actual step.

13. Provide a more detailed explanation if a reader needs more information to fully understand the reason for performing a step.

14. Provide readers with alternative steps to take in case a desired step does not work.

15. When an SOP is time-dependent, indicate the times clearly.

16. When a step depends on informational input (data), include the source, reference document number and date if possible.

17. Decide where to use graphics (drawings, photographs and thumbnail icons) to communicate clearly. Well-labeled drawings often are better than text. Use drawings of labeled (named) parts of objects to show proper relations hips and orientations among the parts or other objects. Show the positioning of hand tools, other tools and even hands and feet if applicable when work is to be performed. For example, show the positioning of a wrench or direction for turning a valve. Show the individual parts of a device in a final assembled position. Consider using thumbnail graphics to visually alert readers that they have come to a safety item.

18. Write a reference and writers' section that includes a complete list of source material used for the SOP. If someone wants to confirm something, they will know where to look. List the names of those who wrote the SOP.

19. Test the SOP in the field and then develop troubleshooting instructions. Anyone who has ever assembled a consumer product knows there are always problems to solve either while trying to assemble something or after it has been assembled. Anticipate all these problems for a reader and include them in a troubleshooting section. Also incorporate troubleshooting tips at each step in a process where they actually occur.

20. One way to anticipate safety, health, environmental and operational problems is to ask an inexperienced person to "walk through" a mock (inactive) process (under close supervision of an expert) and try the steps. Such unknowledgeable person could ask questions or demonstrate behaviors that an experienced or familiar person would not.

THE NEED FOR ORGANIZATIONAL STRUCTURE

It doesn't matter if a utility is large or small; a clear and well-understood organizational plan is vital to its success and long-term viability. Sound organization promotes effective management by uniting the efforts of the governing board, the manager and the employees into the common purpose of operating a successful utility system that meets customer needs. At first glance, the idea of adopting an organizational chart or a chain of command may seem to relate more to larger systems, but in reality, the smaller the system, the more important organization becomes. That is because in a small organization, each employee represents a larger percentage of the staff. Therefore, it is even more important to avoid the duplication of effort and to eliminate confusion.

Developing and implementing a written organizational plan can help achieve those goals. Creating and maintaining an effective organizational plan requires time and careful study. It would be a good idea to involve decision makers, management, and employee representatives into the task. Input from different perspectives can lead to more well- rounded and thorough plan. Following implementation of such a plan, the governing body and management should understand that continuous development, adjustment, and review needs to take place. As the operation changes, the organizational plan should be revised. Any organizational plan needs to consider the ability, needs, and potential of employees. The following are some points to consider when establishing an organizational plan:

- Organization should be based upon the objectives to be achieved and the activities to be performed,
- Each individual should have one "boss" and all directions and guidance should come from that individual,
- Supervisors, at any level, should have a limited number of people for whom they are directly responsible, and
- The number of distinct levels of management should be kept to a minimum.

Delegation of authority should be an objective. This allows decisions to be made by the people who are the closest to the action for which the decision applies. Responsibilities, limits of authority, and the relationship of each organizational department should be clearly stated in approved job descriptions.

In order for any organizational plan to be successful, it must be relatively simple, flexible, and dynamic. That is, it should be a living document and should be regularly reviewed and amended. Once adopted, copies of the plan should be distributed to everyone involved and that includes distributing copies to all board members, managers, and employees. An organizational plan can be an excellent management tool for ensuring that personnel have a clear understanding of their role in the operations of the utility. This plan should be flexible enough to allow job shadowing and continuous staff development.

These elements are important for promoting morale and staff development and in helping employees feel more as a member of the team. Ensuring harmonious relationships while working toward more efficient job performance should be the goal of any organizational plan. Hopefully, the end results will include improved managerial and technical capacity that in turn will lead to improved financial capacity. Any time the three areas of capacity development can advance together in unison, the utility and its employees, and more importantly, the customers, all come out as winners.

FORMAL COMMUNICATION

Is there a formal communication linkage between the water system operator and one or more members of the governing board or board of directors? Formal communication puts in place a process to allow the governing board to be fully informed and in control of the water system decisions. Management capacity is enhanced when formal communication channels are created between governing board members (usually part time officers) and full time professional operations staff. For example, city councils may require their key operations staff to attend their monthly council meetings to report on water system activities, or a council may designate one of its members as the liaison or "point person" for water system issues.

System Policies
Good management will increase the ability of the system to achieve its mission, as well as reduce liability exposure. System policies help create the frames of reference necessary for the professional staff to determine the scope of authority granted by the governing board. Management teams that create written guidance documents also provide a measure of continuity and guidance for water system personnel. Good business practice demands that the policies listed below should be in written form, adopted and periodically reviewed by the water system management team. What is most important is that the written policy exists, that the content is appropriate for the size of the water system, and that the management team is committed to reviewing and updating the policy periodically. The content of the policies is more important than the structure.

The DWSRF loan application requirements identify the following 6 policies as indicators of management capacity. A general description of each type is also offered below.

System Operations Manual or Policy
This policy provides technical guidance on how the water system is operated. This manual or policy is likely to be the most detailed guidance document of the six listed here. Operations policies also include guidance for monitoring and reporting of water samples and testing results.

Board Governance Policy
The board governance policy reflects the protocols for the governing board's activities. This policy includes qualifications for election of board members, the number of members who may serve and their terms of office, rules regarding the conduct of meetings, etc. Establishing board protocols can improve the efficiency of board meetings and result in effective use of officers' time.

Personnel Policy
The personnel policy would include guidance regarding hiring, probation, dismissal and disciplinary procedures; provide detail on employee compensation and fringe benefits; establish requirements for conduct and performance; describe job descriptions and expectations, and explain procedures for employee evaluation.

Safety and/or Risk Management Policy
Accidents, experienced by both the water system staff and the customers they serve, can cause significant disruptions of water service as well as create unexpected financial liabilities. A safety and risk management policy attempts to confine the scope of authority of employees and managers in order to reduce the risk of such negative financial exposure. A water system's

insurance provider can offer assistance in establishing risk management guidelines to limit liability.

Operating Emergency Plan
Every public water system needs to know how it will react to natural disasters and other emergencies. Specifically, the water system management team needs to know what steps are to be taken and what actions are to be accomplished given a variety of threats to service delivery. Since the events of September 11, 2001, threat readiness and response is absolutely necessary to commit to written policy, especially in the face of terrorist threat to essential facilities such as public drinking water systems.

Customer Service Policy
A water system is in the business of providing service—safe drinking water—to its customers. A customer service policy strengthens the relationship between the water system and its customers because it clarifies how the water system will relate to those it serves. This policy should include public information guidance, complaint resolution procedures, problem response requirements, billing and other notification rules, and other actions the system can take to assure the customers that the water system is being run in the most professional manner possible.

Organizations exist to help provide guidance on the content of each of these policy documents. Water systems with limited staff capacity to create these policies can utilize and modify model policies in each category. Organizations such as the Rural Community Assistance Corporation, the West Virginia Rural Water Association and the American Water Works Association have excellent model policies. In addition, similar sized water systems may be good sources of sample policies.

Professional Support Regarding Engineering & Legal Services
Water system capacity in the areas of engineering and legal services (as well as other professional services such as accounting and auditing) is increasing essential to successful service delivery over time. While water systems can assure such capacity by hiring these professionals, most small systems can gain these capacities by retaining engineering and legal services by contract, or by hiring these professional services as necessary.

Legal and engineering services are specifically identified for capacity assessment purposes by the state of West Virginia. Each profession provides to the water system the capacity to keep pace with regulatory requirements and to advise response to changes in these regulatory requirements.

Record Keeping
A final indicator of management capacity used by the State of West Virginia is record keeping. Well-managed water systems are expected to have record keeping systems that can easily yield important records for review by the operations staff, the governing board members, customers (where appropriate), and regulatory agency staff of the OEHS and EPA. Record keeping systems create and preserve an important record of the water system's status and activities. For the purposes of **Drinking Water State Revolving Fund (DWSRF)** loan applications, an evaluation of the condition and content of the record keeping system is made by OEHS.

For a water system seeking to demonstrate management capacity relative to record keeping, the following questions should be answered affirmatively:

- Does this water system have current “as built” engineering drawings of the system facilities?
- Does this water system effectively maintain system operating records for operator, board member, customer, EPA and OEHS reference?
- Does this water system effectively maintain records of correspondence with the appropriate agencies?
- Does this water system effectively maintain records of correspondence with the EPA?
- Does this water system effectively maintain records of the results from required water testing as well as CCRs?

COMMUNICATION

Communicating With Customers

According to the 1996 Safe Water Drinking Act, small water systems must communicate with their customers. Not only do customers want to know what is occurring with their water systems, but also it's the law. Customer relations is all about communication. As defined by the Water Board Bible, a publication of the Kansas Rural Water Association, communication means obtaining two-way dialogue with key constituents such as customers, voters, officials, employees, and the media. Customer relations is also defined as the actions and non-actions that an organization takes towards those who use or purchase its services/products. One-way communication can be accomplished through public or community relations by telling the story of the public service district. Listening to customers through enhanced customer service opens up the channels for two-way communication.

Community relations works by using communication as the tool to link a water system to its customers. By communicating with customers of the system and the community, you as a manager can create awareness about your projects, influence their attitudes and their behavior by reinforcing or changing their commitment to act. Community relations is about building a stronger relationship between your system and the community and by improving communication between system employees and customers. One of the most important facets of community relations is that it educates the community about the importance of water, water use, and water conservation.

Effective communication is essential for the success of your district. In fact, if your system doesn't care enough to tell why your water or wastewater is important, why would customers want to continue to support it? Whether it's sooner or later, every utility needs customer support for capital improvements, higher rate charges, and/or new rules and policies. Less frequently, systems need customer support to fight takeover attempts, pursue beneficial mergers or secure needed state legislation. With a positive approach and informed customers, you will help eliminate rumors and other negative news or information.

A typical community relations program consists of: a newsletter published 3-4 times per year; a board president or mayor's letter mailed semi-annually; customer surveys; press releases which are issued two or three times per year; and Consumer Confidence Reports. As outlined in Chapter 9 of this Handbook, the Consumer Confidence Report, is an excellent opportunity for community relations to begin taking shape.

Customer Service

In order to have good community relations and effective communication, your system must also have good customer service. Water systems must strive to maintain excellent customer service every day of the year. There are four basic skills to developing good customer service:

1. *Possessing a positive, caring attitude.* Customer service begins with the customer's first encounter with the public service district, whether it's a board member or a telephone call to the system's office. A positive attitude will most likely have a positive effect on the outcome of the problem.
2. *Communicating effectively involves good listening.* It is very important to

remember that communication is a two-way process between you and the customer.

3. *Satisfying the customer*. You are expected to do things right the first time. Never let a customer think that you are unconcerned or deny that the problem exists. This can help to eliminate anger. Eliminating anger is essential to good customer service.
4. *Follow up on the problem*. Your response shows the customer that you care. You should always strive to deliver fast, dependable service. However, if something prevents quick service, you should let the customer know that there may be a brief delay and the reason for the delay. The customer only expects you to be honest and never make promises that you know can't be kept.

As a golden rule, remember: Almost everyone likes to be treated as though he or she is important. With good community relations and customer service, you are setting the standards for your public service district's image. Communicating with customers is more than the law; it is a vital part of good utility management.

Communicating With Fellow Employee/Board Members

The importance of communication is also vital to the success or failure of the team structure that you will build with your fellow public service district board members. You will find that throughout the course of your appointed term, there will be numerous issues that you will encounter. Not all issues will be easily resolved. In fact, some issues may even lead to disagreements or worse yet, conflict.

No matter what the case may be, you must remember the principles of communication that should be exercised with your customer base. While you strive to deliver top-rate customer service to external customers, you must exercise similar skills on an internal basis. Should a difference of opinion occur between you and your fellow employee/board members, make a genuine effort to remain calm to keep the situation from escalating. Listening is a key factor in effective communication. Make a genuine effort to listen to and consider other opinions because all opinions have value, even those with which we sometimes disagree. You may realize that your ideas and opinions on the matter at hand are really not that different.

The In's and Out's of Conflict

One of the first things you will discover as a manager associated with a public utility is that there will sometimes be major differences of opinion on the board, with an employee or a customer, particularly when there is a major or controversial issue to be addressed. The debate can often become very emotional and the real issues can fall out of focus. It is important to remain calm, stick to the issues and try to understand the other points of view. The following highlights some principles of conflict resolution.

Managing Conflict

When handling difficult or hostile situations, focus on your desired outcome and remember the following:

- Remain open. Be curious about what the real message is. Do not look for blame or excuses. Do not be judgmental.
- Remain empathetic. Put yourself in the other person's shoes.
- Actively listen with understanding. Clarify what is really bothering the person.

- Remain constructive. Focus on the issue - the problem. Work at problem solving. Ask effective questions.
- Remain involved. Offer help focus on the desired outcome.
- Remain action oriented. Focus on the solutions and make a commitment to act. Follow through on those commitments.

Prepare for Resolution

There's no substitute for preparation. Preparation is a key to successful outcomes. To prepare to deal with the conflict ask yourself some questions:

- How important is the outcome?
- Does this involve a short-term or long-term relationship?
- How important is the relationship?
- Am I the best person to negotiate in this situation?
- How many issues are involved; should we separate them?
- Do we both agree on which issue is most pressing?
- Do we have a deadline?
- What does the other side need most from me?
- What do I need most from the other party?
- Where might the process get hung up?
- Is the conflict emotionally charged beyond what seems predictable by the immediate problem?
- Is part of the cause for the conflict perceptual, emotional, or communication?
- Is this worth the time and energy required?
- What else do I need to know before I begin?

Early in the process, gain agreement that:

- There is a conflict;
- The common-goal is to resolve it; and
- What's been done so far hasn't worked.

Make the commitment to understand first, then to be understood.

Principled Negotiation

Collaborative conflict resolution requires that we try to be both: Cooperative and Assertive - Soft on People and Hard on Issues. It also requires that we turn conflicts into opportunities for mutual gain.

The criteria for good resolutions:

- It is a wise solution;
- It is an efficient solution; and
- It improves the relationship involved (or at least doesn't damage it).

Conflict resolution takes place at three levels:

- The substance of the conflict;
- The process of resolving it; and
- The relationships between the parties.

Negotiation is a basic means of getting what we want from others. It is back and forth communication designed to reach an agreement when you and the other side have some interests that are shared and others that are opposite.

Whether we are conscious of it or not, we are negotiating the process for resolving a conflict with every move we make. Effective conflict resolution requires skill in managing that process. Most people have these skills to some degree, even though they may not consistently practice them.

Resolving Conflict
Four principles of effective WIN/WIN conflict resolution are:

1. Separate people from the problem. All people have their own perceptions, needs, fears, deep held values and emotions. If you perceive a people problem, immediately diagnose what the cause of the problem is. Examine to understand if the cause is perceptual, emotional, or communication.
2. Focus on interests, not positions. When negotiators bargain over positions, they often tend to lock themselves into those positions. The more each defends its position, the more committed they become to it. The more each tries to persuade the other side of the impossibility of changing the position, the more difficult it becomes. Our ego often becomes identified with our position.
3. Invent options for mutual gain. In most negotiations there are three major obstacles that interfere with the inventing of an abundance of options:
    - Searching for the single answer;
    - The assumption of the fixed pie; or
    - Thinking that "solving our problem is their problem."

    We need to understand these constraints in order to overcome them.

4. Insist on using objective criteria for agreeing on solutions. Early in the process, set objective standards, procedures, or common goals that will be used to arrive at a fair and mutually agreeable solution.

Questioning Techniques
Questions can help you to better understand the others' interests and points of view, explore specific information with greater depth, maintain a focus in your interactions clarify information and perceptions, and let the other person know you are interested in his/her concerns, desired outcomes, etc.

- *Ask for clarification.* Avoid confusion, misunderstandings, contradictions and ambiguity. Help me to understand what you mean.
- *Check for understanding.* Explore where the other party is. Am I explaining that clearly?
- *Leading comment.* In a non-threatening manner, ask for more information without really asking a question. I'm concerned about that . . . I'd like your perspective.
- *Logical inquiry.* Welcomes rational thinking to the process. What's the logical next step?
- *Seek and support.* Ask for assistance, agreement, support, help. Would you agree this is a wise choice?

- *Hypothetical question.* Explore possibilities, encourage lateral thinking, welcome imaginative ideas.

As is obvious, communication is an integral part of any successful organization. Effective communication, both internally and externally, will benefit your organization by helping to promote your image and gain community support. In addition, you'll be able to maintain your team approach enabling you to remain focused on your mission to deliver safe, potable drinking water to the residents of your community.

COPING WITH STRESS

Dealing With The Added Stress of Your Position

Coping with stress is important in balancing the life. Holding a position with a public utility is an added stress factor. As a manager, you must make difficult choices between funding options that don't seem reasonable - you know that the lives of real individuals will be affected by your decisions. You face the frustration of rising costs, shrinking resources, and the increasing demand for services. The rewards of the job aren't easy to measure. And all of this comes on top of the normal stresses related to your full-time job and family life.

Stress is a hard concept to define and there are no perfect cures for the problem. Probably the only way for you, to eliminate the stress related to your position would be to quit. But, you would still face the stress related to your regular job, your family and your personal goals. In effect, stress is a fact of life, and there are several things you should know about it:

- Everyone has different reactions to stress. Young or old, rich or poor, male or female - stress doesn't discriminate. However, people may react differently to stress and express it differently, so it may seem to you that others aren't affected by the frustrations associated with stress. They just don't show it in the same ways that you do.
- Pay attention to stress. Some levels of stress are good for you - they get you going and keep you moving. The key to a healthy life is balance - a balance between vigorous activity, excitement, stress, and relaxation. When stress gets too intense, however, it can cause physiological reactions that weaken your body and in some cases can even kill you. So it's important to develop ways to deal with the stress that are best suited to you.
- Stress reactions are contagious. When you're around people who are constantly in an agitated state, you start to feel that way too. Or, on the other hand, if you are under extreme stress, others around you begin to feel the effects. It is important to you and the people around you to deal with stress.
- Manage, but don't expect to eliminate stress. Looking for the perfect solution to all of your stress problems will only create more stress. A couple of aspirin for a headache, a better diet, more exercise will all help, but none promise to rid you of all stresses forever.

Physical Reactions to Stress

The most familiar aspect associated with stress is probably how you feel - tense, keyed up, uptight, perhaps uncomfortable and even out of control. Some people have obvious physical reactions - a backache, a headache, a frown, increased sweat, or a nervous twitch. Some people pick up the pace when they're under stress. They talk faster, move faster, and try to think faster to keep up with that keyed-up feeling - to catch up and even outrun it. Others get flushed or look out of breath when they're under stress.

These are all fairly common reactions to stress and stressful situations. They aren't abnormal, debilitating, or terminal if you understand them and are aware of what they signal. But most individuals can't maintain an agitated pace all the time. When you have a constant tension headache, when your symptoms never go away, when your blood pressure stays high, you need to take steps to reduce stress. Unrelenting stress has been directly linked to high blood pressure, allergies, arthritis, heart attack, chronic depression, alcoholism, drug addictions, and other potentially fatal reactions.

Stress most simply is a demand that causes you to react emotionally, physically, and behaviorally. When you face a stressful situation you feel something, you do something, and your body does something.

Causes of Stress

Everyday you face countless demands that your body must gear up for and respond to. But, for everyone, there are some general areas that seem to trigger responses. They vary from an annoying traffic jam to the death of a loved one - and everyone responds differently. Two overarching categories of stressors are changes and threats. They aren't the cause of all stress reactions, but they are usually associated with the most stressful situations.

Any change brings with it loss, even if the change is something good. You may receive an appointment, but you also lose your spare time and maybe even your privacy. Physical change, like moving to a new home or starting a new job, also creates a sense of loss. And emotional changes like approaching middle age, loss of self-esteem, personal success or failure, all cause stress. Change means giving up something, perhaps something comfortable, for something that is strange and unknown.

Things that threaten you usually cause fear and eventually stress. There are general threats to society that cause widespread stress, like fear of diseases such as cancer or AIDS, or anxiety over economic stability. There are also more personal threats that can trigger stress - fear of losing your job, threats to personal goals, or threats to your marriage. Threats are different from changes because they signal something that might happen; something that you worry about in advance.

Change and threat are very broad categories often associated with stress. But it's the little things, the day-to-day anxieties that can get to you. When you're facing a major crisis, you know it and brace yourself. But if you don't realize something's wearing you down, you aren't prepared for it and you're unlikely to take appropriate action to deal with it. The key is knowledge - knowing what you're up against, how you're reacting, and how you're going to handle it.

Sometimes it helps to identify who and what puts pressure on you. Some of those stressors may be the public, your family, the governing body to which report, you yourself, time and controversy. By recognizing these factors, you may be better prepared to cope with their affects on you.

Coping With Stress

There are three simple steps that can help you deal with stress more effectively. First, get to know yourself - how you react, why you react the way that you do, and what you can do about it. Second, build support structures to help you cope with stress. Third, learn how to provide support for others around you.

- **Understand your reactions to stress.** Knowledge is an important tool in dealing with stress. Simply knowing that you're under stress, that you're facing some tough problems and your reaction is perfectly legitimate, will help. By looking at your wants, your needs, and your conflicts, you can become even more prepared to deal with the stress in your life.
- **Build support structures.** Support is something that makes you feel secure; it's people, places, and things to turn to for help. Many of the stressful situations you

face are things that take you by surprise, so you need a regular and reliable way to deal with those surprises - something you can always count on. For these reasons, it's important that you broaden your relationships. Find people who are different from you, who are involved in different areas, businesses, and backgrounds. They'll add variety to your perspective.

- **Provide support for others.** How you relate to and react to others is an important part of dealing with stress. Your job as a manager requires a lot of interpersonal contact. Try to be aware of what the people you live and work with are feeling. Learn to recognize their stress symptoms so that you can adjust to their ups and downs. You can't solve their problems, but you can adapt to their needs and be supportive when support is what they need. Helping people around you handle stress will help to alleviate some of your own stress.

Managing stress is a big job. Stress comes from every dimension of your life. The simplest way to deal with stress is to recognize and accept it. Stress is an important part of your life, and you must realize that you can't eliminate it. However, you owe it to yourself to try to deal with it. Each time that you face a problem and cope with it, you'll be a little smarter and a little stronger for the next situation that arises.

TIME MANAGEMENT

As a manager, you will find yourself in a unique position. If you don't manage your time, you may become over-extended and frustrated by your inability to meet all of your commitments. Too many people enter management position believing that they can do everything without sacrificing any of their other commitments. Being able to cope with all of the dimensions of your new life begins with an understanding of reality--what can actually be accomplished in a twenty-four hour time period. Once you are willing to accept this reality, you'll be able to find ways to work more effectively, by relying on others to do some legwork for you, and thinking through your priorities and deciding how to approach them.

However, a preoccupation with time - schedules on the wall, lists on the door, a timer on the desk, and one eye on the clock--can make you less productive, by subjecting you to added stress. Part of the reality of your life as a public official is that other people will make demands on your time, and many of those demands will be unscheduled. Flexibility is the key to survival.

Getting Organized

Personal disorganization is a major time waster for nearly everyone. For managers, disorganization can be a more serious problem since you have more opportunities to be disorganized -- an extra part-time job that involves lots of paperwork and often no central office to store it in. Getting organized is a good way to start a time management program.

There are two levels of disorganization to consider. First, there's physical disarray -- your personal environment. Are you constantly looking through stacks of paper in a bulging briefcase? And then there's a more subtle, personal disorganization that causes you to miss appointments, do three things at once, and run around like a chicken with your head cut off. You'll need to handle both problems before you can expect to manage your time effectively. Organizing your environment is essential to productivity. The following are some suggestions on how to get organized for your role as a public official.

Identify resources. One important way to get organized is to learn the layout--physical and organizational--of your work environment. You need to know where to find things in the public service district office or whom to talk to when you need information, and generally who does what. Having this kind of information available in your head, in your address file, or in a loose-leaf binder will save you time in the long run. If an orientation is not provided routinely to new managers, you may want to request one. Get to know key staff and board members as well. Prepare questions in advance and make notes to help you remember important points later.

Create a filing system. Once you've decided where you're going to work on matters related to the public water system, plan a filing system that will help you get your work accomplished. Some of the files you might need include:

- General subject files for reports and communications on topics such as planning and personnel;
- Chronological files of agendas, meeting materials, and minutes, organized by month; and
- Action files such as "pending," "priority," and "next meeting."

Keep in mind that most important documents are filed permanently in the public water system office and that you aren't expected to be the system's record keeper. Be selective in your filing.

For example, some managers keep a separate file for each issue but determine what materials to file based on the likelihood of citizen inquiries and the persistence of policy issues.

Use to-do lists. Work sheets, to-do lists, and calendars are common and easy approaches to time management. The key is not how many lists and calendars you have, but how you use them. A daily or weekly to-do list is a good way to map out strategy and set short-range priorities. Try to set aside a few minutes at the beginning or end of each day to jot down a daily list, or review your weekly list. Figure out what's most important and how to organize the tasks to accomplish each most efficiently.

When the tasks are many and the time is short, some managers have found that they need something more than a to-do list. A simple work sheet or calendar that blocks out specific times for the tasks on your to-do list is a useful tool. Choose one that you'll be comfortable carrying with you so that you can make notes, jot down appointments, and check your schedule easily.

Set your goals. Knowing clearly what you expect to do today, tomorrow, next week, or next year will increase your personal sense of organization and enable you to plan the best use of your time. To achieve the objectives that drove you to become a manager, you will need to take time to think again about long-term goals and how to achieve them.

You set goals on several levels--personal lifetime goals, career goals, family goals, and goals for the public service district. There will be overlaps in each of these categories. Defining long-range goals can be a big job. You might find it's easiest to begin with a simple goal-setting exercise and gradually build toward a lifetime goal statement.

Regardless of the goal-setting process you choose, it's important to start with a time frame. Are you setting goals for the next two months, six months, one year, or two years? The time frame is important because later you will want to be able to assess your progress toward your goals. Ask yourself what it is you want to accomplish during the time chosen, and think of some results. Be specific, so that you'll be able to assess whether or not you're achieving your goals. Be realistic, too, about what you can achieve in the time frame that you have specified. Revamping the comprehensive plan, for example, can't be done in three months. But set goals that will challenge you, not ones that are trivial. Then decide which goals you'll work on first ranking them will help you decide where to focus your energies.

Avoid a goal-setting process that is more complex and time-consuming than the goals themselves. Goals are bound to change along the way. You'll revise the old ones, add some new ones, and even abandon a few. Be flexible but principled. You need to know what you want, specify it, and get to work. Review your goals periodically and evaluate your progress. If a goal is no longer feasible and your efforts toward accomplishing it are serving no useful purpose, be willing to abandon it without remorse.

Delegate the right things at the right time. Delegation can be your best weapon in the battle against the clock, if you know what, when, how and to whom to delegate. Unfortunately, delegation is often easier said than done. Determine what to delegate to which staff and how to do it appropriately.

Ideal tasks for delegation include compiling background data to help you make a decision, determining public opinion on a particular issue and general legwork. Avoid delegating any potentially controversial jobs or political tasks that would be better handled by you.

Here are a few suggestions to help you in the art and process of effective delegation:

- Delegate complete tasks whenever possible so that you can get a complete and useable product in return.
- Be specific about what you want done, what you expect as a result of the work, and when you need it accomplished. Establish a system to keep track of delegated tasks and check progress periodically.
- Expect a product that is different from what you would have done, but that is still useful to you. Don't impose your style on the person to whom you're delegating a job.
- Return work that is incomplete or inadequate, with clear instructions for improvements. Don't confuse style variations with inadequate work, but if results are consistently poor even with the clearest of instructions, look elsewhere for assistance.

Manage your telephone time. If you don't have someone who can screen calls for you, you need to do it yourself. When you are making telephone calls, have a clear idea of what you want to accomplish with each call and anticipate what types of information you might need to have handy. You can avoid playing "telephone tag" by selecting a time when the person you're calling is likely to be in (avoid mealtimes and after business hours when you're calling an office number, for example). Set the tone for the call by indicating your own time constraints and what you want or need. Phrases such as "I only have a minute, but . . ." or "I just have a quick suggestion" are good openers if you don't have time to chat.

When handling incoming calls, let the caller know immediately if it's an inconvenient time for you. Learn to find out the purpose of the call quickly and decide if you can handle it immediately, despite other pressures. If you can, do so - it's one less item to go on your to-do list. Work on developing an ability to direct conversations politely and subtly minimize socializing. When a call involves a request for information, respond quickly and succinctly. If, however, you sense a problem, anxiety, or a need for discussion, establish a way to address that need--a meeting, or a return call when you'll have more time.

Use your priorities. Use your priorities to help you determine when to say no. How many invitations or requests have you accepted recently that turned out to be a waste of time? When was the last time you said, "No, I can't." It's difficult to turn invitations down, but it's a skill worth learning.

When you receive a political or a social invitation, ask yourself, "Will my family, my colleagues, my profession, or my ambitions suffer if I don't do this? Will they benefit if I do?" When you're asked to join something or serve on another board, think not only of the honor and the contribution you'll make, but also of the time your service will require on a regular basis. Do you have that much to give up?

Become an expert on two or three issues that are important to you. Once you've chosen topics that are top priorities for you, do your homework, and try to find out where board members stand and why. You can't be an expert in everything; trying to do so will make you the proverbial "jack of all trades and master of none." But if you become known for the knowledge and perspective you provide on preventative maintenance issues, for example, then you will have others turning to you for advice and ideas, which will increase your influence.

Make every meeting productive. Do you ever get the feeling that life is passing you by when you're sitting in meetings? Careful preparation, managing the meeting itself, and good follow-up are the keys to productive meetings. Making meetings work requires effort on the part of the chairperson, but even the most organized chairperson can use some help from other participants. Pay attention to the discussion and the group dynamics, and direct your own points in these areas:

- Be sure the problem being addressed is clearly defined and that relevant facts are presented.
- Encourage participation by those who might normally be quiet but could have information to contribute. Discourage monopolization of time by any one person.
- Encourage participants to evaluate what has been said, how it relates to decisions that need to be made, and whether more time needs to be spent on an issue.
- At the end of the meeting, be sure someone summarized the previous discussion and the group's consensus on what will be done next.

There are many more time management techniques that this section hasn't addressed. However, it is designed to encourage you to think about what you want to do, what you have to do, how much time you have in which to do those things, and how you can get them all done.

Personal disorganization is a major time waster for nearly everyone. Here are a few tips that you'll want to be sure to remember:

- You need to know where to find things in the public water system office or whom to talk to when you need information, and generally who does what.
- A daily or weekly to-do list is a good way to map out strategy and set short-range priorities.
- To achieve the objectives that drove you to become a manager, you will need to take time to think again about long-term goals and how to achieve them.
- Delegation can be your best weapon in the battle against the clock, if you know what, when, how and to whom to delegate.
- If you don't have someone who can screen calls for you, you need to do it yourself.
- Use your priorities to help you determine when to say no.
- Careful preparation, managing the meeting itself, and good follow-up are the keys to productive meetings.

Try a few of the techniques discussed here--a time log, a game plan, the art of saying no. Remember that managing your time doesn't mean that you should develop a stopwatch mentality--it simply means that you should make some conscious choices about what you do, how you do it, and when you do it.

SAFETY PROGRAMS

Every water system, regardless of size, needs to develop and implement a safety program to prevent injury to its employees and to avoid accidents involving the public. The development of a safety program should include information regarding potential job hazards, preventive safety measures, proper safety and emergency procedures for the use and operation of tools and equipment, and the proper methods of handling and reporting accidents and injuries. One person should be designated the responsibility for overseeing and maintaining the safety program.

A safety program is designed to maintain a safe workplace. All employees will be required to comply with all aspects of the safety program. The safety program should include a written safety plan designed to promote employee participation in the safety program. The Safety Plan should list procedures which have been established as part of the water system's safety program which identifies and describes water system hazards and provides safety measures.

The following sections will not outline the exact safety procedures that should be written in the Safety Plan. Rather, it will serve as a guide for recommended job activities for which safety procedures should be established and listed, as well as other general topics related to the safety program.

Identification and Description of Hazards

The safety hazards associated with water supply systems are numerous and varied. Water system personnel should be made aware of all hazards, where these hazards are present in the water system, and how they may affect the employees. The following list identifies some of the general hazards faced by water system employees:

1. Bodily injury caused by falls, improper lifting, improper use of tools and equipment, and accidents involving moving mechanical equipment;
2. Electrical shock and burns;
3. Injury caused by improper chemical handling;
4. Exposure to chlorine gas;
5. Injury caused by improper entrance into confined spaces; and,
6. Trenching and shoring cave-ins.

The Safety Plan also should include a detailed description of each hazard, including where each hazard may be present and what the health risk from each hazard may be to the employee.

Recommended Safety Program

Once the job hazards have been identified and described, it is important to outline the proper safety procedures which should be used when performing each job task to reduce these hazards as much as possible. Therefore, the Safety Plan should provide detailed safe operating procedures for specific aspects of water system employee job responsibilities. Recommended safety procedures for each of these water system job tasks can be found in the AWWA's Manual M3, Safety Practices for Water Utilities, as well as in other reference materials on water supply system operation. Manufacturer's literature also may be a good source of safety procedures for some of the tools, equipment, and machinery.

DEVELOPING SAFETY MANUALS

There are only a few simple rules to developing a safe operating procedure. Most of the rules are common sense. Think of them in four main categories:

- Objectives in writing a procedure;
- Audience (your employees);
- Format to reach that audience; and
- Style of writing that will make procedures clear and easy to understand.

Know Your Objectives

It will be impossible to develop effective safety and health procedures unless you have a clear idea of what you want them to help accomplish. For example, your objectives might be to:

- Reduce the number and severity of accidents;
- Reduce lost time;
- Cut the cost of workers' compensation and liability insurance;
- Education workers' families in good health and safety practices;
- Improve morale and cut the need for time off;
- Provide a written record of safety instruction;
- Provide a basis for discipline when rules are ignored;
- Provide a basis for further improvement of safe practices; and
- Comply with government regulations.

Know Your Audience

You are addressing safety procedures initially to supervisors, trainers, and other members of management who will interpret and enforce company regulations on safety and health. Your ultimate audience, though, is usually the employees who will follow the rules. You may also be writing for your employees' families, contract employees who work at your company, corporate management, and eventually your unions, your auditors, even OSHA and other local, state, and federal regulators.

You must know who will be using these procedures as well as in what environment. For example, will they most likely be read only in an emergency, or will they be read before a procedure (task) is undertaken for the first time? This information will help you decide about such elements as page design (plenty of white space, use of bold type, for example) and supporting graphics that might help you get your instructions across.

Your readers want you to succeed; they want the rules to help them all stay safe and healthy. Know the particular risks that your employees face at work in your company every day. You should also know about unexpected situations that employees might not ordinarily think about, that have been mentioned by industry associations, government agencies, insurance firms, consultants, and others.

Think like a salesperson. The requirement of knowing your audience is no different from the questions faced by your sales and advertising people. They can't market your product unless they know who the potential buyers are, and the particular needs of those buyers. For you to sell safety, you must also know your company and your industry. You can't expect a chemical worker to follow the same safety rules as those for a power company line repairer.

Know the reading level of your audience. You needn't insult your readers by talking down to them, but even more important, don't talk over their heads. If your employees have no more than a grade school or high school education, don't write safety procedures that sound like doctoral dissertations. In some situations, the question may be "Can they read?" Or, "Do they read English?"

Use an Effective Format

Choose a format that makes it easy for the employee to find a specific rule when a safety or health question comes up. It doesn't help to have a comprehensive manual of safety regulations and procedures if it isn't easily available to employees, or if it's difficult to find the rule they need.

For the comprehensive manual, a good format uses a standard 8 ½" by 11" page, hole-punched for insertions in a standard binder. (A particular advantage of this format is that it can be updated easily – you don't have to choose between, on the one hand, reissuing the entire manual for changes in a few procedures and, on the other, retaining manuals that provide employees with outdated material.) Here are some additional pointers:

- Print the company name (or even better, the logo, which takes less space), the manual name (if there is more than one company manual), and the procedure title at the top of each page. The title should be brief (five words are usually enough).
- If your manual is divided into sections, the name of the section should be shown.
- Most important is a procedure number, usually at the top right, for ease of filing and later finding.
- Include the date of issue, and identify the procedure as new or revision.
- The page number should be shown as "Page 1 of 3" so the reader will know if a page is missing.
- Some company's list approval initials and dates, but these approvals take up space and are not needed if the transmittal memo is signed by the authorizing executive.

Consider the Computer

Many companies keep their procedures on computer, for ease of writing and revising. Some companies that have microcomputers throughout the plant go a step further, making their safety procedures available to employees through local workstations tied to a mainframe computer, or by personal computers networked together. When this happens, an employee or supervisor having access to a workstation or PC can quickly call up a procedure by number, name, or subject.

It may be most effective to use both the written and computer versions, however, as some employees are more comfortable with one format than the other, also, an emergency could cause loss of power, with workstations down. With procedures on computer, you need not lose the advantage of having an employee read through a procedure when it is issued – or when the employee files it in a manual – if you call attention to new procedures and changed safety requirements with a memo or electronic mail notice.

Your manual should have a Table of Contents. Whether it is in print or on computer, you should update it at least once a year.

Mini-Manuals

Some companies issue reduced-size safety manuals, small enough for the employee to keep in a pocket or other convenience place. They usually include only the most important safety

procedures. These small manuals can be reprinted every year or so, provided that current manuals with all revisions are maintained in accessible locations.

Most companies give new employees a booklet containing guidelines to their safety and health regulations, as well as personnel practices and other company policies. These guidelines are general in content. The updates can also be given to veteran employees, helping to keep them current on company policies.

Prepare Readable Procedures

The most difficult step is writing procedures that are clean, easy to read and understand. It's up to management to see that the instructions are distributed to supervisors and employees (this part is easy), that they are read and understood, and that the employees then follow these safety instructions. Some might say that employee compliance is the hardest step-but it certainly can't be achieved if the instructions aren't understood. The following tips should help ensure understanding.

Write an introduction. Before plunging into the procedure text, it is nice to have a brief introduction, explaining the purpose and scope of the new procedure or the significance of revisions to existing procedures. Some companies indicate here who is responsible for enforcing the procedure. The introduction need not go into great detail; the detail belongs in the text that follows. The introduction is helpful, not only to the reader, but also to the writer. It requires defining the objective of the safety procedure: "What are we trying to accomplish? Do we need this procedure at all? If this is an important safety matter, what is the best way to tell it to the employee?"

Make an outline. Because a safety and health procedure should be a very precise document, it deserves to be written carefully. Time and effort will be saved, if you make an outline listing the points that should be stressed, and the best order to present them. Then organize your points in that logical order, and start writing.

Write with precision and clarity. The amateur sometimes gets wordy when first asked to write. Remember that you're trying to get an idea across to another human being. So try to write clearly. Use precise words, that mean something to you – don't feel you must use long or complex words or sentences. Treat the reader as you'd want to be treated by the boss. If you're receiving a project or even a brief instruction, you have a right to know what your superior expects. You don't want to hear mumbles, or language you don't understand so give your reader a break. Use action verbs, and write in the present tense; use the imperative ("do it," not "You should do it" or "It will be done" or "It should be done"). Write as though you were talking to the person doing the procedure at the time.

- Keep your sentences short. If you have a very long sentence, break it into two or more thoughts, and make each thought a separate sentence.
- Avoid jargon. If you are referring to technical material, such as OSHA standards, write in everyday language. Explain technical terms, and spell out abbreviations, if not everyone will know what you mean.
- Keep your paragraphs short; each should express a separate idea.
- Illustrate your ideas with written examples, or even with graphics. (If you use a computer, desktop publishing and graphics software can make a manual more attractive – and therefore, more likely to be read and remembered.) Some people are visually oriented, some prefer words, still others numbers. Try to include a

flowchart, a diagram, a chart, a picture, or some other example when it will help clarify your words in the text.

- Put ideas in a positive way. It's better to say "Do the job this way, because it's safer than "Don't do that, because it's dangerous."
- Try to keep the procedure itself to a reasonable size. A one-, two- or three-page procedure is readable. Ten pages may seem threatening or boring to the reader. The reader is usually looking for an answer to a specific situation, and may get lost if your procedure tries to cover a complex process all at once. Go back to your outline: it may suggest how to break up your long text into several manageable short procedures. Or, if you must keep the text in one comprehensive procedure, divide it into sections, clearly identified by subject and page number on the first page.
- Summarize, test, and check. When you're all done, summarize (for yourself) what you've written. Compare the text with your introduction and your objectives. Did you write what you said you would? Does your procedure fit the scope you mentioned in the introduction? If not, revise either the introduction or the procedure.
- Have an end user test your draft, by trying to follow it. This can be a great help in pinpointing words, phrases, or paragraphs that are unclear. Finally check your writing for spelling and punctuation. It would be embarrassing to have typos in something official, like a safety and health procedure.

Preparing Guidelines

When writing guidelines (such as general information on safety and other matters for new employees), follow the same approach as for procedures, but you may be explaining rather than instructing. For guidelines such as policy summaries or company and plant regulations, write explanatory material as statements ("So and so is done" rather than "Do it this way"). Give examples when helpful don't assume the reader understands. Write guidelines in a consistent format: headings, indents, and boldface type, plenty of white space.

Preparation Can Be Painless

Developing safety procedures and guidelines can be relatively easy, even fun, and certainly rewarding. Just put yourself in the reader's shoes, and write the sort of straightforward, clear procedure that any reader is looking for. The reader wants to stay out of trouble, avoid injury, and do an effective job for the company. You can help. It's important work, and if you'll follow the simple rules mentioned above, it can be a fulfilling experience. In summing up, your effort can make a difference in making your company more productive and in keeping your fellow employees safe and healthy. What more could you ask?

CAPACITY DEVELOPMENT

As a manager, it is important for you to truly understand the diverse needs of the people living in the community in which you have been appointed. If your board is truly interested in responding to these needs, you will have to utilize the community and it's people in an effort to employ, sustain and renew the resources and skills that your community will need if it is expected to thrive over time and become the kind of community it's residents want it to become.

Defining Capacity Development

As a manager of the local water utility board, you can play an important role in building capacity within your board and throughout your community. Some people view capacity building as training, but it really is much more than that. Capacity refers to the capabilities required of a public water system in order to achieve and maintain compliance with the drinking water rules. The Safe Drinking Water Act Amendments of 1996 provides a framework for States and public water systems to work together to help ensure that systems acquire and maintain the technical, financial, and managerial capacity needed to meet the Act's public health protection objectives. Adequate capability in all three areas is necessary for a successful public water system.

According to the Safe Drinking Water Act, these terms are defined in the following manner:

- ***Technical Capacity.*** Technical capacity or capability means that the water system meets standards of engineering and structural integrity necessary to serve customer needs. Technically capable water systems are constructed, operated, and maintained according to accepted quality standards.
- ***Financial Capacity.*** Financial capacity refers to the water system's ability to raise and properly manage the money it needs to operate efficiently over the long term.
- ***Management Capacity.*** Managerial capacity means that the water system's management structure is capable of providing proper stewardship of the system. Governing boards or authorities are actively involved in oversight of system operations.

The 1996 Safe Drinking Water Amendments include requirements for States to obtain authority to assure that new systems are viable, to develop a strategy to address the capacity of existing systems, and to ensure that potential Drinking Water State Revolving Fund recipients have sufficient technical, financial and managerial capacity prior to receiving loan funds.

The Act outlines several items to include in States' capacity development strategies for existing systems; however, it is not mandated that States must include each of these items, but rather that they must consider each of the items in developing the strategy. Clearly, including each of the required elements produces a comprehensive capacity development program for the State and addresses all of the necessary issues. However, each State must examine each of the issues and determine those elements that best fit the needs of the State.

Building Capacity In Your Organization

Building capacity within an organization requires people to focus on a variety of issues. Typically, people associate the success of an organization with the level of capacity within the organization.

However, unfortunately the level of capacity isn't always what it should be. In order to successfully build capacity within an organization, ongoing improvements in the knowledge and

ability of a community's residents is a vital piece of the puzzle. Leadership skills can help to mobilize people and resources. At times, a lack of skills or knowledge keeps community members from making good decisions or achieving what they originally set out to do. At other times, much of an organization's existing human capacity is neither recognized nor utilized in efforts undertaken by the group.

An organization that is responsible for its own future should initiate well-crafted and carefully considered plans. It must then turn those plans into reality through strategic local action making changes when conditions or assumptions change. A board that monitors and documents the results of its actions, and regularly reflects on its progress and barriers, learns from its experience will be better equipped for the future. An organization that learns from its mistakes becomes more resilient, more capable of adapting to change and better able to improve its efforts and sustain itself over time.

Typically, a community is home to a wide variety of people with diverse backgrounds and views. Efforts on behalf of the water utility board will benefit the entire community when everyone has a voice, when all voices are encouraged, and when residents understand the means to express their views and contribute to the community. The board should constantly promote respect, outreach and information sharing inside and outside the organization. These efforts can ultimately lead to collaborative ventures that no one group could possibly undertake alone.

The responsible stewardship of resources will promote capacity development within an organization. More people will support an organization who closely monitors and communicates the status of finances and who acts as a responsible steward of natural resources for future generations.

Vital community organizations deploy financial, technical, and managerial resources in an effort to create, maintain and improve the quality of life for people in communities. As a manager, make an effort to recognize the diversity in your community and act in a manner, which promotes responsible activity and forward thinking on behalf of the residents in your community.

Continuous Learning

Continuous learning is a vital part of effective capacity building in an organization. Continuous learning is a process that builds the capacity of individuals, groups and communities as a whole to respond effectively to rapidly changing circumstances. At its most basic, continuous learning means taking time to reflect on the consequences of one action before undertaking another. Take time to ask how the following questions can improve future results: What did we learn from this effort? How would we do it better next time? Did the results of our effort move us closer to our goal? If not, what should we do differently? Continuous learning provides a feedback loop between an organization's goals and the actions taken to reach the goals.

The process of continuous learning allows organizations to keep track of the results of their actions and chart progress toward their goals. When an action isn't effective, reflection allows a community to consider alternative approaches and to change, even in midstream, where appropriate. As learning compounds over time, organizations, which represent communities, become more and more successful in meeting their challenges effectively and with a minimum of wasted resources.

How Is This Different From What We Already Do?

Many water utility boards already plan for the future; some even engage in strategic planning. Some organizations take action to meet their goals once the plan is complete. But often, only a small group of people is involved in putting the plan into action. Once that core group of people burns out or moves on, the momentum often stops until another group decides that it's time to do something.

Building technical, financial and managerial capacity and continuous learning are efforts, which promote learning from a community and organization's history and then spreading this knowledge and responsibility through effective communication across the entire community. Adequate capability in each of these areas is necessary for successful public water systems. Clearly, worthwhile capacity building involves the engagement of more people in action, reflection and further action in order to meet the goals outlined by the water utility board and the customers that it serves.

BASIC CONCEPTS OF ASSET ANAGEMENT

Asset management is a planning process that ensures that you get the most value from each of your assets and have the financial resources to rehabilitate and replace them when necessary. Asset management also includes developing a plan to reduce costs while increasing the efficiency and the reliability of your assets. Successful asset management depends on knowing about your system's assets and regularly communicating with management and customers about your system's future needs.

You should thoroughly review your asset management plan at least once a year, noting any relevant changes. Throughout the year, you should keep a running list of items to consider or include in the annual update.

Asset management consists of the following five steps:

1. Taking an inventory. Before you can manage your assets, you need to know what assets you have and what condition they are in. This information will help you schedule rehabilitations and replacements of your assets.
2. Prioritizing your assets. Your water system probably has a limited budget. Prioritizing your assets will ensure that you allocate funds to the rehabilitation or replacement of your most important assets.
3. Developing an asset management plan. Planning for the rehabilitation and replacement of your assets includes estimating how much money you will need each year to maintain the operation of your system each year. This includes developing a budget and calculating your required reserves.
4. Implementing your asset management plan. Once you have determined how much money you will have to set aside each year and how much additional funding (if any) you will need to match that amount, you need to work with your management and customers and with regulators to carry out your plan and ensure that you have the technical and financial means to deliver safe water to your customers.
5. Reviewing and revising your asset management plan. Once you have developed an asset management plan, do not stick it in a drawer and forget about it! Your asset management plan should be used to help you shape your operations. It is a flexible document that should evolve as you gain more information and as priorities shift.

Step #1 – How Do I Inventory My Assets?

Before you can manage your assets, you need to know what you have, what condition it is in, and how much longer you expect it to last. To complete an inventory, list all your assets and collect the following information for each:

- Condition;
- Age;
- Service history; and
- Useful life.

You may want to keep track of your assets on a computer spreadsheet or use custom software. Inventorying your assets can be an intensive job. Get the best information that you can, but

don’t get bogged down in this step and use estimates where needed. If you keep up with an asset management program, new information will become available as assets get replaced or rehabilitated, and your inventory of assets will improve.

Step #2 – How Do I Prioritize My Assets?
Once you have inventoried your assets, your next step will be to prioritize your assets based on their importance to your system. Prioritization means ranking your system’s assets to help you decide how to allocate resources. Factors involved in prioritization include:

- How soon will you have to replace an asset (its remaining useful life);
- How important the asset is to the provision of safe drinking water (its impact on public health); and
- How important the asset is to the operation of the system (can other assets do the same job?).

A water system is often one of many responsibilities of a community or municipality. Other factors can influence which water system projects are funded and when they are completed. For example, in many small communities, distribution system rehabilitation and replacement is tied to the road repair schedule and budgeting. Developing an asset management plan and prioritizing your assets will help you determine when you should replace your assets so as to not jeopardize water delivery, but you may have to work with your community or municipality to develop a replacement schedule that works for all parties.

Ideally, an asset management plan will help you forecast your financial needs well into the future and develop a rehabilitation and replacement schedule appropriate for your system’s priorities.

Step #3 – How Do I Plan for the Future?
Now that you have prioritized your assets, you will have to determine how much it will cost to rehabilitate and replace them as they deteriorate. To properly protect public health and deliver safe water, you need to rehabilitate and replace your assets in addition to operating your water system. Many systems will need considerable lead-time to budget and gather the necessary funds. By developing an asset management plan, you will be able to allocate your resources in the most efficient way.

Remember that while the total reserves needed each year may at first seem overwhelming, it is easier to put aside $500 a year to replace a storage tank than to pay $20,000 to replace it when it fails. Step #4 will discuss some of your system’s options for raising revenues to carry out your asset management plan.

Step #4 – How Do I Carry Out This Plan?
Now that you have discovered that you should be reserving additional money every year to cover the cost of rehabilitating and replacing your assets. Preparing a financial forecast (by estimating how much revenue you expect for the next five years) will help you determine if you will need to supplement your revenues to carry out your asset management plan.

If you don’t already have a five-year forecast, you should complete this task. In addition, to increase or more efficiently use your revenues to operate and maintain your system and carry out your asset management plan you can:

- **Create additional reserve accounts.** Reserve all or some of the money you will need in a protected capital improvement reserve account and create an emergency account to fund unexpected repairs and replacements. You may be restricted in how much money can be placed in reserve accounts. Check with your state coordinator for more information.
- **Form partnerships.** Working with other water systems may allow you to lower costs, simplify management, and continue to provide your customers with safe drinking water.
- **Consider increasing rates.** Alternatively, consider assessing a flat fee for infrastructure improvements or funding of a reserve account. Check with your state for rate-setting information.
- **Apply for financial assistance.** Banks and government agencies can provide funds for infrastructure projects such as treatment facilities, distribution lines, and water source development. If you do not have enough funds to pay for needed capital improvements, you can apply for loans and grants. Although you will pay interest on loans which will, over the long term, increase your costs, loans will allow you to address needed system improvements without dramatically increasing rates or assessing fees to cover the costs. Seek financial advice from your city clerk, a certified accountant, or contact your State Capacity Development Coordinator if you are considering a loan to fund capital improvement projects.

Step #5 – What Should I Do Next?

Once you have inventoried and prioritized your assets, determined how much money you will need to set aside each year to fund the rehabilitation and replacement of your assets, and explored funding options for your water system, you can use your asset management plan to help plan your water system's future. You will have a good picture of when you will need to replace your assets and how much money you will need to fund those replacements and continue to deliver safe and secure drinking water to your customers.

Remember that the asset management plan should be reviewed, revised, and updated on an annual basis. Your asset management plan should help you shape your system's operations and should change as your priorities change. Current information in your asset management plan provides a better picture of your system's position, and better prepares you to meet your water system's future needs.

INTRODUCTION TO GASB 34

The Governmental Accounting Standards Board's Statement #34 (GASB 34) revises several accounting and financial reporting practices for state and local governmental entities including publicly-owned water systems. If your water system is publicly owned, you will need to follow GASB 34 requirements to obtain a "clean opinion" (i.e., a good credit rating) from an auditor. Without a clean opinion, you may face higher interest rates on loans and bonds and may be more closely scrutinized by regulators and public officials. Following GASB 34 standards will require publicly-owned water systems to report the value of infrastructure assets and the cost of deferred maintenance. An accurate and up-to-date asset management plan will help you comply with this requirement.

Note: If you operate a privately owned water system, you do not need to comply with GASB 34. However, complying with generally accepted accounting principles (GAAP) makes sense for any system. Visit the Financial Accounting Standards Board (FASB) at www.fasb.org for more information on GAAP for private entities.

The GASB is a private, nonprofit organization that is responsible for establishing and improving governmental accounting and financial reporting standards. GASB also establishes GAAP for state and local governmental entities, including publicly-owned water systems. The standards and principles developed by GASB are strictly voluntary. However, some states may incorporate them into their laws and regulations and therefore make them mandatory for local governments and the water systems they operate.

In June 1999, GASB approved “Statement Number 34, Basic Financial Statements and Management’s Discussion and Analysis for State and Local Governments.” Statement Number 34 revised several accounting practices and established new standards for the annual financial reports required of state and local governments. The revisions were intended to make annual financial reports easier to understand and make the financial data more useful to decision makers.

GAAP and GASB 34 make good sense for publicly-owned water systems as these principals are often the best way to keep track of finances. Following them will help you form a better picture of your system’s financial health, forecast future shortfalls, and continue to deliver safe drinking water to your customers. In addition, following GASB standards is a must for obtaining a “clean opinion” (i.e., a good credit rating) from an auditor. Clean opinions are often necessary for loans, negotiating favorable interest rates, or issuing bonds.

GASB 34 requires:

1. An accounting of revenues and expenditures in the period in which they are earned or incurred. This is called accrual-based accounting. For example, if the water system provides water in December 2003 and receives payment in February 2004, the water system would report that the money was earned in 2003. This change will allow the system and its investors to understand the direct financial results of its investments.

2. A reporting of the value of infrastructure assets and the cost of deferred maintenance. These measures allow the public to evaluate how well the system is managing its assets. A current asset management plan is a valuable tool to help you meet this requirement if you are complying with Statement 34. In addition, reporting the true cost of deferred maintenance (i.e., unmade repairs that result in equipment or facility deterioration) may allow systems to more easily raise money for maintenance activities necessary to use facilities and equipment for their full expected lives.

3. Contributed capital (for example, federal grants) to be considered a form of income. This change will increase a system's reported income. While reporting all forms of income is a necessary accounting principal, this method of reporting (which includes contributed capital) may make it more difficult to justify rate increases.

For more information, talk to your city clerk, ask a certified public accountant, or contact your State Capacity Development Coordinator. GASB's website offers more information on Statement 34, as well as guidance documents, case studies of entities that have implemented Statement 34, and trainings. Visit www.gasb.org for more information.

FINANCE AND BUDGETING

The most important function of the managers of small rural water systems is the economic management of the water system. The primary purpose of the board is to provide its customers an abundant and consistent supply of good-quality water at a fair and reasonable price. Water systems organize themselves into a business organization that can accomplish this purpose.

Several critical elements make up the business side of a rural water system. They include the following: record keeping, long-term planning and budgeting, financing and setting rates. The success of using these financial tools depends on knowing the projected number of users and the proper sizing of the system to fit the present and future water demands. Although a rural water system is a non-profit entity, it must be managed with the same scrutiny of a private business. Customers must know their water is provided as economically as possible and without the future of the water system being jeopardized. In order to be an effective steward of the system's financial resources, the board has the following responsibilities:

- maintain records related to quantity of water used by types of users, total water metered, water losses, and water production;
- maintain good financial records;
- consistently monitor expenses and incomes and set procedures that ensure that expenses are monitored and that all due incomes are received;
- use short-term and long-term budgets to plan for the maintenance, the improvement, and the expansion of the system;
- keep abreast of any grants available and the best sources for financing loans for the system; and
- set fair rates and keep rate structure in line with financial needs and plans.

This chapter will attempt to expand on these responsibilities through a discussion of financial administration. Let's begin by examining the importance of good record keeping.

Record Keeping

Accurate record keeping is an indispensable first step in properly managing a local water system. Some water systems choose to keep detailed records on computers, while others keep records in a hand-written format. Unfortunately, some systems do not do a good job of keeping water records or financial records. Keeping poor records of water use and water production prevents good financial planning. Water use and water production cannot be estimated without the use of meters at the wells, at the tanks, and at individual user sites.

Water Use and Water Supply. Before the board can develop usable, long-term financial plans, it must be able to project the water needs and growth in water use in the service area. There are several variables that will help determine the projections for the public service district. They include:

- new users within the present public service district network;
- expansions outside the present lines but within the service area;
- user density in a new area;
- alternative sources of water;
- present users that leave the area or discontinue service;

- potential tie-in with an adjoining system for emergencies;
- potential merger with another system;
- potential for better control of water wasted; and
- the high-use periods when water demands are the highest.

The availability of water for users depends on the following:

- number of wells or sources of water;
- productive capacity of the wells or water sources;
- control of water losses through leaks or unmetered runoff;
- capacity of the main water lines and the private lines of the users;
- storage capacity of tanks and holding facilities; and
- ability of the water system organization to manage the system effectively.

Rural water systems in West Virginia provide water to a variety of users. These users include water for households and individual families as well as for agricultural, commercial and industrial purposes. It is helpful to organize records so that these different users are separately identified, even if rates are not separated.

Records should be maintained on a monthly and a yearly basis. For most rural water systems, this may only be a matter of recording and keeping records that are already being generated. Only if records are filed for several years can trends be observed, and trends are important in long-term planning. Demographic trends will have an impact on new users and users that have moved from your service area. Household income trends impact the ability of users to promptly pay water bills. Physical water use records – such as gallons of water used per customer – help form the basis for planning future water needs and investment requirements.

A map or plat of the whole water system, including wells, tanks, lines, line connections, and meters, is beneficial in the planning process. Maps or schematic diagrams should be required to help new board members and new employees, to help professionals and contractors who are hired, and to help other utility organizations who use the same areas for their installations. Maintaining plats should be an assignment of managers and operators who are responsible for the changes and additions.

Financial Record Keeping.
Financial record keeping forms the basis for long-term financial planning and for setting rates. Without a good record-keeping system that includes carefully planned expense and income categories, financial planning is severely limited. Computer record-keeping systems that are inexpensive, easy to understand, greatly reduce the time required to keep records and generate customized reports are good investments for most water associations. Boards should consider hiring bookkeepers with computer experience, or they should select good record-keeping and billing programs and have bookkeepers trained to use the programs selected.

Several programs on the market are specifically designed for water and sewage systems. Investigate these and select those that best fit the needs and budget of your public service district. If a computerized program is not selected, it is critical to organize the data so that the same information can be generated for keeping current income and expense totals and for preparing financial budgets.

Financial record keeping includes keeping tabs on all income received and all expenses paid by the public service district, preferably on a monthly basis. Major income and expense items should be set apart so the board knows where money is coming from and where money is being spent. The number of income and expense sectors should be large enough to distinguish major areas but small enough to simplify planning.

Expenses.
Public service districts encounter numerous expenses including personnel, equipment and vehicles, supplies, insurance, postage, office, contracts, debt payments, and reserves. The following is a breakdown of expense categories.

- Personnel expenses include wages and salaries, health insurance, payroll taxes paid by employer, travel, per diem, reimbursements, educational fees or training fees for employees and board members.
- Equipment and vehicle costs include parts, small repairs, fuel and oil, vehicle insurance, tags, taxes and lease payments.
- Supplies include chemicals, pipes and fittings, valves, pump parts, sampling kits, meters on hand, small tools, and shipping costs.
- Insurance expenses include general liability, director and board member liability, employee liability, property, crime bonding, life and casualty.
- Office costs include stamps and postage, envelopes and printed cards, paper, computers and computer equipment, printers, typewriters, and office equipment repairs.
- Utilities expenses include electricity for pumps and well houses and electricity and gas for the office facility.
- Telephone costs include telephone for office, cell phones, and portable phones for managers and operators.
- Contract expenses include those for system repairs and contracts with professionals, engineers, accounting, and legal advisors.
- Debt payments include principal and interest payments on current loans and bonds.
- Reserves include money for emergencies, major repairs on water system, major repairs on equipment, and planned expansions and improvements.
- Other expenses may include water purchases, returned meter deposits, and appropriate miscellaneous costs.

Income.
Income includes water sales, late charges, penalties, reconnecting fees, connection fees and meter deposits, interest on reserves, contract work, membership charges, and other incoming money. Examples of activity in these categories includes the following:

- Water bills paid by customers and water sold to another system.
- Late charges, penalties, and reconnecting fees include interest charges when bills are not paid by due date, additional penalties charged when bills are not paid by due date or before next billing period, fees for reconnecting service after meters have been removed for nonpayment.
- Connection fees and meter deposits include income from charges made for original connection to water system and deposits made for meter installation and meters less meter deposit returns.

- Interest on reserves includes interest earned from money deposited in a reserve bank account for water system emergencies, major repairs, improvements, or expansions.
- Contract work includes work by employees for other systems or equipment or machinery leased out when not in use.
- Other income may include grants and loans provided to the system. However, these are not classified as income but appear in cash flows.

Balance Sheet.
A balance sheet represents the statement of balances in terms of the following accounting model:

Assets = Liabilities + Members' Equity

Assets are the objects owned by and having value for the public service district. Examples include cash in the bank and water lines in the ground. Liabilities are the opposite of assets. These are typically obligations or the amount owed to another party. Members' equity represents the difference between the assets and the liabilities.

Current assets represent cash or other assets that will become cash within one year. Investments and funds include non-current assets other than property, plant, and equipment. They also include long-term investments in securities such as stocks, bonds, and notes. Intangible assets that have no physical substance, such as lines or buildings are also recognized in this category. Examples are easements, patents, and trademarks. Items that cannot be categorized should be classified as "other assets" on the balance sheet.

Current liabilities are obligations that must be paid within a year and include accounts payable, short-term notes payable, and accrued expenses for payrolls, interest, and taxes. Long-term liabilities are bonds payable, notes payable to banks, and lease obligations.

Retained earnings represent the accumulation of income (loss) since the inception of the public service district. An accurate balance sheet is one of the best tools your system can have. It is a snapshot of your public service district's finances on any given date.

Income Statement.
An income statement compares the water system's revenues to its expenses. The revenues are the money that the public service district receives for items such as water sales and hookup fees. Expenses are costs incurred in order to generate revenues.

The difference between a balance sheet and an income statement is that the income statement shows the financial performance of a public service district over a period of time, such as a month or a year.

Financial Management
Financial management for a local water system should include providing stability for the utility, careful budgeting, and providing capital improvement funds for future utility expansion. These three areas must be examined on a routine basis to ensure the continued operation of the public service district. They may be formally reviewed on an annual basis and when making long-term plans for public service district maintenance and expansion.

Financial Ratios. To evaluate the financial condition and performance of a public service district, financial analysis is a necessity. The process uses a ratio, or index, relating two pieces of financial data to each other.

The first ratio is the operating ratio. The operating ratio is the ratio of the total revenues divided by the total operating expenses. The second ratio is the coverage ratio, which is the ratio of total revenue without the non-debt expenses divided by the debt service expenses. The coverage ratio measures the ability of the utility to pay the principal and interest on loans and bonds.

A utility that is financially in good shape will have an operating ratio and a coverage ratio above 1.0. In fact, most bonds and loans require the utility to have a coverage ratio of at least 1.25. The operating ratio shows if the utility generates enough revenue to pay its operating expenses.

Calculate the total revenue to adding all revenue generated by user fees, hookup charges, taxes or assessments, interest income, and special income. Next, determine the total operating expenses by adding up the expenses of the utility, including administrative costs, salaries, benefits, chemicals, supplies, fuel, equipment costs,

equipment replacement fund, principal and interest payments, and miscellaneous expenses.

Other useful ratios. Liquidity measures your water system's ability to meet current obligations or bills. The two main liquidity ratios are current ratio and quick ratio. The current ratio represents your water system's ability to meet current liabilities. The quick ratio shows the ability of the water system to stay in business.

The Local Water System Budget

The most basic financial tool for any business or organization is the budget. It is a financial tool which can be used to forecast expenses and to track costs of various departments throughout the fiscal year. Proper utilization of a comprehensive budget can eliminate year-end fiscal shortfalls, and associated problems with financial commitments to funding agencies. It is extremely difficult to properly control spending and to maintain fiscal viability without a well-maintained comprehensive budget.

Budgeting is the nerve center of the public service district. It is the primary decision-making system with which board members allocate resources to achieve organizational priorities and objectives. Budgeting is the process of estimating income and expenses for a future time period. Planning budgets may be for 1 year, for 3 years, for 10 years, or for any planning period the board thinks is appropriate.

Budgets are planning tools. Your board should prepare an annual budget each year to assess the financial condition of the public service district. In fact, the practice of preparing a budget is required according to West Virginia State Code 16-13A-10. The Code states, "The board shall establish the beginning and ending of its fiscal year, which period shall constitute its budget year, and at least thirty days prior to the beginning of the first full fiscal year after the creation of the district and annually thereafter the general manager shall prepare and submit to the board a tentative budget which shall include all operation and maintenance expenses, payments to a capital replacement account and bond payment schedules for the ensuing fiscal year. Such tentative budget shall be considered by the board and subject to and revisions or amendments that may be determined by the board shall be adopted as the budget for the ensuing fiscal year. Upon adoption of the budget, a copy of the budget shall be forwarded to the county commission. No expenditures for operational maintenance expenses in excess of the budget shall be made during such fiscal year unless unanimously authorized and directed by the board."

Many water system lenders require systems to submit budget proposals and cash flow projections for approval within 1 month of each new fiscal year. Failure to do long-term budgeting can cause many problems such as a lack of funds for emergencies or expansions, poor purchasing patterns, and erratic rate setting.

Budgets are plans with dollars attached. They help to identify: what we plan to do; what it is expected to cost; where will we get the income; and the expected financial position of the public service district.

Budgeting is a team effort. Management and staff should plan a work session to examine last year's expenses and discuss system needs for the coming year. In planning the budget, keep in mind the mission of the public service district. The purpose of a budget is to accomplish goals that ultimately benefit customers.

There are several types of budgets that can be utilized by your system. The operating budget and capital budget are two that can be used depending on your system.

Operating Budget.
The operating budget outlines the annual spending plan for each fiscal year. It designates the purposes for which revenues will be spent and the amount of money to be spent for each purpose.

Probably the most commonly used type of budget, the operating budget sets the procedures for identifying revenue sources, estimates amounts of revenues available, allocates resources across departments and programs, and provides the basis for monitoring expenditures and assessing the efficiency of the district's services.

A budget also provides internal and external accountability. Internal accountability is the assurance that financial resources are being used in conformance with appropriations made by the board. External accountability is the ability of the public to evaluate how well the public service district's priorities are "in sync" with the public's perception of the community's needs, the financial decisions of board officials and the management of public funds.

The operating budget also serves as a management tool, which provides a plan for raising revenues and making expenditures throughout the fiscal year. Without a budget, the available resources could be squandered without regard to the available amount.

Capital Budget.
A capital budget is a plan of major construction projects. Capital improvement items are budgeted separately from the operating budget because they involve large, one-time expenditures, which are usually financed differently from day-to-day expenses. Capital expenditures are for projects whose useful life span is multi-year or indefinite. Capital outlays of funds can go for the purchase, construction, or repair of land; buildings; infrastructure such as wastewater treatment and water systems; and unattached equipment or furnishings such as trucks and system repair equipment. The classification of capital items depends upon the size of the district's budget.

Public service districts use capital budgets because decisions are being made about larger amounts of money. Capital expenditures usually entail the acquisition of land, purchase of major equipment such as a mainframe computer or vehicle, and construction or renovation of buildings

and other public facilities. Capital projects require careful planning and coordination, which include developing realistic cost estimates and implementation schedules to ensure timely completion of projects at an affordable cost.

Developing a Budget

When developing an actual budget document, it is best to compile preliminary information based on recommendations from the general manager. These results can then be scrutinized and priorities can be established to develop the actual budget document. At a minimum, the budget document should include the following information:

- Beginning fund balance - In most cases, there will be some money left over from the previous year that can be spent on the coming fiscal year.
- Estimated revenues - These revenues include locally produced revenues, intergovernmental transfers, interest earnings, rents, etc.
- Estimated expenditures - Most public service districts classify similar expenditures such as personnel, supplies, contracts, utilities, equipment, etc. in categories called objects, activities or cost centers. These expenditures are typically recorded as line items in the budget, and traditionally most small governments have used line item budgets.

Some public service districts rely on a program budget, which classifies expenditures by program area. The budget document assigns to these program areas the percentage of each line item associated with a specific activity. This enables the public service district to accurately capture the total costs of providing the program or service.

A new approach is called a performance budget. This method of budgeting not only assigns total costs to each service, but also breaks out the units of service or benefits provided. This method enables the community to determine if it is getting a good return on its investment.

Each of these budget approaches has its respective advantages and disadvantages. The public service district must decide which type is best suited to meet their needs.

Whatever type of budget your organization chooses to utilize, it is important to carefully plan the budget taking into account historical revenues and expenditures, debt service requirements and clear instruction to those who will be responsible for its administration. As a result, developing a budget without careful consideration can result in serious policy implications.

Reserves

Debt Service Reserve. If you borrowed money to build your system, your loan agreement requires you to have a Debt Service Reserve. The Debt Service Reserve is in addition to your loan repayment. The Debt Service Reserve insures that you can make your debt payments on time even if you have a financial emergency. It should be noted that most lien holders prohibit withdrawals or transfers from a system's Debt Service Reserve without prior approval. Thus, Debt Service Reserves typically are restricted cash assets.

System Financial Reserves. The equipment owned by the public service district will eventually wear out or will occasionally need to be changed when emergencies occur. The only way to assure your customers of an uninterrupted supply of safe drinking water in the future is to set aside money each month to cover these costs.

A System Financial Reserve Account can be set up at the bank in an interest-bearing savings account. Ideally, a system's budgeted depreciation expense is transferred monthly from the operating account to the Financial Reserve Account. Unlike your Debt Service Reserve, this account is unrestricted cash and typically is used for three purposes: planned equipment repair and replacement, emergency repairs, and planned system expansion and improvements. To plan on equipment repair and replacement, make a list of major equipment. Together with your operator, determine the time between breakdowns and the remaining life expectancy and replacement cost of each piece of major equipment. To estimate how much your system will need next year for emergency repairs, review what emergencies took place in the last 12-24 months and how much each costs to resolve.

The next step in developing a budget is to estimate the full cost of operating your system next year. First determine what your expense categories are. Expense categories are the major types of expenses your system has each year. You can review these categories from the budget for the previous year. If you do not have a budget, work with your bookkeeper to make a list of the major expenses your system has each year.

Some typical expense budget categories may include:

- Annual Debt Service;
- Salaries or Personnel Costs;
- Office Utilities;
- Operating Utilities;
- Operating Supplies;
- Office Supplies;
- Contract System Repairs;
- Equipment Leases;
- Insurance;
- Office Rental;
- Accounting, Auditing, Legal, Engineering;
- Telephone; and
- Out-of-Town Travel.

Estimating System Revenue and Balancing the Budget.

When estimating revenues for the public service district, ignore non-operating revenues, and count only operating revenues. Most systems have two types of income – operating revenue and non-operating revenue.

Operating revenue typically comes from the following sources:

- Sales of water;
- Connection fees;
- Late payments, penalties, and reconnection fees; and
- Forfeited meter deposits.

Non-operating revenue comes from the following sources:

- Interest on checking account;
- Interest on reserve account; and
- Meter deposits.

Monitoring the Budget.

At this point, you've prepared your budget. Monitoring the budget is important to keep your system financially stable. Your bookkeeper must gather and report financial information to the board every month. When reviewing your revenue and expense line items, if the revenues exceed expenses plus reserve, you have an operation gain; if not, you have an operation loss. In addition, it is important to keep in mind that a public service district's past due accounts receivable balance should never exceed 10 percent of the projected annual revenues.

After reviewing your performance, analyze your findings. If revenues did not exceed expenses for the month, determine the cause of the problem. Check to see if transfers to reserves are being made. If some expenses are higher than budgeted, see what you and your fellow board members should do to reduce them. Take action on uncollected amounts from past water bills. If needed, reduce or control expenditures and increase revenues.

Capital Improvements and Long-Term Financial Planning.
Most small systems develop a 5-year plan for future needs and add to this plan each year. A capital improvements fund must be a part of the utility budget and account for expanding service, upgrading quality of water treatment, and replacing worn-out equipment. A plan should contain a financial estimate for each year and possible sources of financing so that when the time comes, you will have money to pay for these improvements.

Financial Assistance
Many public service districts need additional funds to meet critical and urgent needs and to upgrade their system. Potential funding sources include loans and grants from federal and state agencies, banks, foundations, and other sources. Many of these programs have certain conditions your organization must meet in order to be eligible. If you do not qualify for these programs, there are private financial institutions that may be able to assist you.

Banks and government funding agencies usually provide money for "hardware costs" such as treatment facilities, distribution lines, and water source development. Other costs, such as operation, maintenance, and water quality monitoring, must be paid for out of water charges or support from your parent organization. Remember that if you get a loan, you may have to increase water charges to meet the loan payments.

Before you apply for funding, find out what each source will pay for and what information they will need to consider your application. Most lending and granting agencies will want to see financial statements such as budgets, income statements, and cash flow documents.

Sources of governmental funding programs for rural public service districts in West Virginia include the following. A brief description of the funding option has been included for your information.

USDA Rural Development – Rural Utilities Service. The U.S. Department of Agriculture Rural Development, through the Rural Utilities Service, provides loans to develop water systems in rural areas and towns with a population not in excess of 10,000. The funds are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and corporations not operated for profit. Rural Utilities Service also guarantees water and waste disposal loans made by banks and other eligible lenders.

Drinking Water State Revolving Fund. The State of West Virginia provides low interest or no interest loans to eligible water systems. The loans can finance the cost of infrastructure

improvement projects. To be eligible for a loan, a system must either have technical, managerial, and financial capacity or will be able to achieve and maintain technical, managerial, and financial capacity through the use of the funds.

West Virginia Infrastructure and Jobs Development Council (IJDC). The IJDC is somewhat unique because not every state has the benefits available through a similar structure. The Council provides loans and grants to eligible counties, municipalities and special purpose districts. In addition, all other government sponsored funding options in West Virginia, with the exception of USDA Rural Development and Small Business Administration, is coordinated by the IJDC.

Water Development Authority. The Water Development Authority provides loans for construction costs to eligible water systems.

Appalachian Regional Commission. Limited grant funds are available from the Appalachian Regional Commission. These funds are used in combination with other funding sources for public water systems.

Small Business Administration. The Small Business Administration (SBA) provides two types of loan assistance to small businesses. It guarantees loans made by local banks, thus providing a reduced interest rate to the borrower. It also provides direct loans to businesses that are unable to get an SBA-guaranteed loan through a bank. Funds for direct loans are limited, and are often available only to firms owned by or serving disadvantaged groups.

Community Development Block Grants/Small Cities Block Grants. These grants, which are given by the U.S. Department of Housing and Urban Development (HUD), must be applied for and administered by the town in which your system is located. The funds, however, may be used to make improvements in private water systems.

Using Bonds To Finance Construction

A bond issue can be a complicated process–especially when bonds are used in conjunction with other funding sources. In addition, a bond issue can be an expensive undertaking. However, the potential benefits of issuing long-term debt quickly and at a relatively low interest rate may be enough to convince your system to take the plunge.

Even before considering bonds, public service district officials should examine their drinking water projects. Once all available grant and low-interest loan sources are pursued, bonds could prove to be an appropriate means to round out a construction funding package. If bonds are to be used for a project, a small district should not have to go about the process entirely on its own. Some government agencies and organizations can provide advice and assistance with a bond issue.

In simplest terms, a bond is a mechanism used to borrow money. The bond issuer-the public service district-receives an amount of money in return for a promise to repay the borrowed amount, along with interest, according to a set schedule. As with other types of long-term financing, bonds should be used for new construction or major capital replacement-not as a method for covering operating expenses. However, there are many fees associated with bond issues. For bonds to be a better option than long-term financing, the amount of interest saved must exceed these fees.

There are many types of bonds and bond structures used for drinking water construction projects. A bond issue can be developed to best fit the circumstances surrounding a specific water project. The three most commonly used bond types for water projects are general obligation, revenue, and special assessment.

General obligation (GO) bonds. General obligation bonds are widely used for water-related projects. When funding water projects, general obligation bonds are often repaid from system revenues and backed by property tax assessments in case revenues somehow fall short. Although water systems do generate income, experts say that GO bonds are most appropriate for parks and other projects that do not generate revenue.

Revenue bonds. Revenue bonds are especially appropriate for projects that generate revenue. They are repaid using proceeds from the water system operation. While community water projects traditionally have been funded with general obligation bonds, in recent years there has been a strong move toward revenue bonds for water projects.

Special assessment bonds. This type of bond is especially appropriate for water projects that benefit a specific area or neighborhood. A water line extension is a good example. These bonds are repaid through a special tax assessment on the neighborhood that benefits from the project. These and other bond types can be used as part of initial project funding, and they can be used later as part of refinancing packages.

Bond issues can have short-term maturities (one year or less) or long- term maturities (15-40 years). Also, bond repayment schedules vary. Short-term bonds are often used as interim financing by systems awaiting delivery of promised funding from government or other sources. These bonds give systems immediate access to funding capital, allowing construction to begin sooner. These bonds are paid off once the system receives the promised funding.

In addition, a bond issue can have a fixed interest rate or a variable rate. Fixed-rate bonds carry the same interest rate throughout the life of the bond. Variable-rate bonds, on the other hand, have interest rates that fluctuate periodically to match changes in the bond market. Variable-rate bonds generally have shorter maturity dates and lower interest rates than fixed-rate bonds.

Most bonds for water-related projects are tax-exempt, meaning investors generally are not required to pay federal taxes on interest earned from these bonds. State and local taxes are exempt in some cases, too. Because investors are attracted by the tax advantages of these bonds, they can be offered at slightly lower interest rates than other investments.

Public service districts should seek outside assistance with any bond issue. The type of assistance needed depends on the complexities involved with the bond issue, as well as the project being funded. As stated earlier, some government officials can provide guidance for a bond issue. However, in most cases, the public service district should consider hiring professional bond counsel to help with the issue. The bond counsel will advise the system of all legal and tax aspects of the bond sale. The counsel can review any outstanding system debt, determine how much revenue will be needed to pay off the proposed bonds, and recommend maturity structures and other bond specifics.

Setting Rates and Rate Structures

As stated earlier, an important part of managing a water system and keeping it financially strong is maintaining accurate records. On a regular basis, decision makers should ask, “How much

water did we produce or buy, and how much did we sell?" The answers to these questions affect your system's operation and income, including the rates you set. The income from the sale of water and services determines whether or not your system will prosper.

A successful water system operates according to sound business principles. Systems must charge a fair price for the services they provide. Some customers argue that water should be free, but testing, treating, storing, pumping and delivering a constant supply of water is expensive. Water system leaders must set rates that are sufficient to pay for the services their system provides and to meet their future needs.

The rate structure is the engine that keeps the water system organization in business. Board members of nonprofit public service districts often refuse to make needed rate increases. The boards and the managers of small rural water systems are not only responsible for the system operating as efficiently as possible but also are responsible for generating enough funds to meet emergencies and to maintain the long-run viability of the system. The rate structure must be fair to all its members or water customers. Annual planning helps prevent large and abrupt changes in rates caused by new capital outlays or emergency repairs or replacements.

Before adjusting rates, you and your fellow board members should consider the following:

- Raising rates because of inefficiency and poor management results in animosity by the consumers toward the board of directors and public service district employees.
- Poor management cannot be overcome by raising rates. A loss of confidence and support will occur, often resulting in the failure of the existing organization and an expensive reorganization.
- Other factors related to job losses by customers, decreases in personal incomes, and people moving out of the district may make it difficult even under the best management conditions.

Some policies and practices may reduce the problems associated with rate increases and must occur before any rate changes are made. These issues have already been discussed but should be noted again in relation to rate structures.

- Collection Policies – These policies should be part of the public service district's bylaws and should be strictly enforced. Stealing water is illegal, and the board should see that violators are reported.
- Water Meters – Every water system user should have a meter and receive a water bill. Exceptions to this policy usual create uncertainty and distrust and are perceived as unfair.
- Water Losses – Monitor tanks and lines for leaks. Water losses add to the electricity and pumping costs and wear out the equipment, resulting in higher costs to users.
- Contracting and Work Projects – The policies and practices that the board follows for contracting can have a considerable impact on the costs of doing business and/or the income earned by the organization. Contracting decisions are based on needs and experience, and individual boards are qualified to make the best decisions.
- Environmental and Health Regulations – Increases in required testing, changes in structural requirements, and increases in required procedures have added to the

costs of doing business. However, water system boards have no choice in meeting these requirements.

- Financial Record Keeping and Budgeting – Before your board can convince its water consumers that rates need to be changed, you must have accurate figures related to expenses and income, to your present budget, and to your long-term plans. Without records and budgets, proper rates will not be assessed, and rate-change proposals are not much more than guesses. The board cannot make sound decisions and be decisive about needs without using records and preparing budgets.

Before setting rate structures, it is important for you and your fellow board members to carefully analyze costs associated with delivering potable water to your customer base. By determining which costs are fixed and which costs are variable, you will be able to have a clear picture of obligations that must be paid even if the water system were shut down, compared to obligations that depend on the quantity of water produced.

If you determine that an increase in income is necessary, there are some alternatives to raising rates. As a first option, your board may want to consider a water audit. An audit will help you find unaccounted for water in your system, which will ultimately help you raise funds by cutting costs. Another alternative may be to revise system policies.

In addition to providing water, systems provide customers with a range of services, including installation and repairs. If the price of service has increased steadily during the last 5 years but your rates and fees have remained the same it may be time to revise your policies.

Thirdly, your system may just need to make some changes to allow it to operate more efficiently. When you consider ways to cut system costs, think of the system as a business. You may want to consider upgrading your billing system, performing an energy audit to make sure that all electrical devices such as pumps and motors are operating at top efficiency, purchasing items in bulk, and/or making cooperative purchases with neighboring water systems.

Finally, you may find that your efforts to increase income in other ways may not be sufficient. If you find it necessary to increase rates there are a few tips that you may want to keep in mind. These tips are discussed briefly in the following paragraphs.

Timing rate adjustments. The timing of rate adjustments is important. Systems may meet with less resistance if decision makers time a rate hike wisely and explain to the customer why the increase is necessary. If possible, introduce the question of a rate hike when there are no other pressing issues which might cloud the issue and hinder the debate. Try to avoid raising rates during holidays, at back to school time, during legislative sessions or near an election or during high water-consumption months.

The work of implementing a rate increase should start a year or so before the target date. This leaves time for you and your fellow board members to do your homework. Appraise what you've been doing and what you need to do in the future. Determine how the job is getting done or not getting done. It may be helpful to have the objective opinion of an outside expert.

Rates should be adjusted when the system's income does not pay its expenses despite efforts in other areas of system operation. Public service districts may want to consider adjusting rates annually based on projected revenue needed for the next year. Rate adjustments meet with less

resistance if they are in small increments each year rather than a large adjustment every 3 years. Some systems use rate indexing, which is a set percentage of increase every year to keep up with inflation.

Informing the public. Regardless of the way your system chooses to adjust rates, keep your customers informed. Don't let them discover rate hikes with the next bill.

You may want to consider developing a visual presentation, which includes photos of facilities, equipment and people. These materials can assist you in illustrating current conditions. In addition, it is important to effectively communicate corrective measures and their costs. Finally, a successful presentation will link community growth, economic development, recreation and increased property values to water and wastewater treatment services.

As you can see, finance and budgeting can include a variety of subjects that can be difficult to fully grasp. However, it is essential for public service district board members to have a sound understanding of the organization's finances to be good stewards for the public's money. Good money management is essential to assuring that an effective and efficient financial plan can be developed that will fund your board's vision for the community's utility system**.**

THE NECESSITY OF REPORTING

The passage of the Safe Drinking Water Act in 1974 regulates all public water supplies in this country. The law establishes a cooperative program between the states and the U.S. Environmental Protection Agency (EPA) for public water supply regulation. States can assume primary enforcement authority for the act and for subsequent rules and regulations. The EPA writes all regulations to implement provisions of the law. These regulations are published in Title 40 of the Code of Federal Regulations, Parts 136 to 149. States use the federal regulations as their guidelines.

The Division of Health – Department of Health and Human Resources is the enforcement agency for the Safe Drinking Water Act in West Virginia. Title 64 – Series 3 of the Legislative Rule outlines the application and enforcement of the Act in West Virginia.

This section will explore two requirements set forth by the Safe Drinking Water Act: Sampling and Reporting Requirements and Record Keeping.

Sampling and Reporting

Proper sampling is essential to maintaining a safe supply of drinking water for your customer base. In fact, the Safe Drinking Water Act states that public service districts are directly responsible for monitoring the following:

- Inorganic chemicals;
- Microbiological contaminants;
- Organic chemicals;
- Radiological contaminants;
- Turbidity; and
- Unregulated chemicals.

The type of analysis, sampling frequency, and location of sampling points vary from system to system and from contaminants to contaminant. In West Virginia, public service districts are required to submit the results of any test, measurement or analysis required by the Safe Drinking Water Act to the Division of Health within forty days of the district's receipt of the results. If a public service district encounters a situation in which they might be in violation of the Act, they should notify the Division of Health within twenty-four hours after discovering the violation.

In addition, public water systems are required to submit a monthly written summary to the Division of Health outlining the operation, test data, and other relevant information. However, the Division may require additional information from the districts, as they deem necessary.

If you encounter a situation in which your public service district is in violation of the Act, the Division of Health requires that public notification take place. Your system is required to send a copy of each public notice that is distributed, posted or made available to the media to the Division within seven days of notifying the public of the violation.

When selecting a laboratory to be utilized by your system for testing purposes, you should keep in mind that all laboratories providing drinking water testing results must be certified by the West Virginia Division of Health or by the Federal EPA. These laboratories are subject to regular on-site inspections by the Division of Health to ensure their compliance with the Safe Drinking Water Act.

Record Keeping
The law also requires public water systems to keep the following records in the water system or treatment facility:

- Copies of laboratory results, including the name of the person who collected the samples;
- Dates and locations of sampling points;
- Records of violations and steps taken to correct violations;
- Sanitary survey reports; and
- All other water-quality information.

These records are public information. Customers of the water system have the right to inspect these records at any time. The public water system must provide copies of these records on demand. Depending on the type of record, they should be maintained by the public service district for a minimum of five to ten years. Specifically, tests for turbidity, radiological and chemical analytical records should be kept for a period of ten years. Control tests, microbiological and operation records should be kept for five years. Should a violation of the requirements of the Safe Drinking Water Act occur, the records of action taken by the system to correct the violation should be kept by the public service district for a period of three years after the correction is completed.

The Division of Health requires that all material recorded should include the date, place and time of the sampling; the name of the person who collected the sample; identification as to whether it was a routine distribution system sample, resample, raw or drinking water sample, or other special purpose sample. In addition, you should include the date of the analysis; the laboratory and person responsible for performing the analysis; the analytical technique or method used for microbiological testing; and the results of the analysis.

Penalties
Adhering to the law is critical for your public service district. The Safe Drinking Water Act was developed to protect our resources and to ensure a safe and adequate supply of drinking water. A violation of the Act is a serious crime and violators could be found guilty of a misdemeanor and fined as much as $5,000 a day until the violation is corrected.

Sampling, reporting and good record keeping are essential to the success of your public service district. Make a practice of regularly sampling the water produced by your system and submit those sampling reports to the West Virginia Division of Health within the required time frame. You will find that throughout this Handbook, the importance of good record keeping is emphasized on numerous occasions. Efficient record keeping now will help you foresee and eliminate problems in the future.

PUBLIC REALTIONS

Developing a Media Relations Program

There has always been a certain amount of apprehension when dealing with the press. After all, systems have usually received coverage only in the wake of unfortunate events such as a major line break or when receiving violations. The days of employing any type of avoidance tactics with the press should end. Systems should be proactive and begin utilizing the media for communicating with customers and explain exactly what takes place inside the utility's operations. Developing a basic media relations program can achieve this and can be accomplished in a short period of time.

There are several reasons for developing a media relations program. First, media relations is a two-way form of communication. Through the press, systems can send a message and receive feedback from customers – the ones who are ultimately paying the bills. This feedback is invaluable in the management process. The resulting comments can identify what customers want and expect. This information can contribute greatly to long-range planning. The resulting data may uncover some public misconceptions about the system and allow managers and board members an opportunity to address the situation.

A public relations program encourages public trust and support by identifying government policies, procedures, concerns of citizens and facilitating public involvement in planning and implementation. A good public relations program also acknowledges the importance of information from all segments of the community.

Timing is another reason for developing a media relations program. The passage of the Amendments to the Safe Drinking Water Act in 1996 (to be discussed in more detail in Chapter 14) mandated that small utility systems communicate with the public through the Consumer Confidence Report (CCR). Since this mandate is fairly new to most small systems, questions concerning the report's content are not uncommon. Assistance for compiling a comprehensive report is available from the West Virginia Rural Water Association.

Press Release. A formal news release is more professional than being approached by a reporter at a busy moment when a manager may not be fully prepared to respond. A press release gives the manager and board members time to thoughtfully compose their message and lessen chances of being misquoted and omitting details.

When writing a press release, be concise and stick to the facts. Four hundred words should be the target limit. Simple terminology and short paragraphs are considered the most effective. However, if you have a newsworthy item, don't be afraid to use two pages. Always be sure to include the contact person's name, telephone number, and if available, e-mail information. Date the release and include full names and titles. Be sure to use system stationery, or a specially printed form for releases and type on one side only. The appearance of a press release can be almost as important as what it says. If it appears professional, it's more likely to solicit a professional response from the media.

Newsletter. A good media relations program should also include a system newsletter. A newsletter can be an excellent tool to help systems reach both short and long-term goals. It's not difficult to produce a professional looking publication on a monthly, or quarterly basis. Most computers are equipped with various word processing programs, which contain templates that

provide fast and easy ways to create newsletters. Some tips for preparing newsletters include: brief articles; short attention-grabbing headlines; use of differing type styles; and the encouragement of reader feedback. With a newsletter, customers can be made aware of system needs and the groundwork for future community support can be started and built on with each issue. As stated earlier, the battle for public support can be won ahead of time with thoughtful planning and a little work.

Press Kit. The development of a press kit serves as the crowning achievement for any media relations program. Putting together a media kit isn't difficult. A press guide is normally a glossy folder containing items the media might find helpful when reporting on the system. Statistical data, such as gallons pumped and sold, the total number of customers, and budget data can also be included. Organizational charts, a brief narrative detailing the system's history, photographs of the plant and personnel, articles from other publications, and a press release can all be included with minimal effort.

The Role of the Board Member in Dealing With the Media

As a community leader, you know that you must understand the opinions of the public if you are to make effective and informed decisions. You also know that citizens who come out to meetings do not necessarily represent the majority opinion on some issues. You may be surprised by how difficult it can be to inform people about issues and to change inaccurate perceptions of plans or programs.

In an effort to meet this challenge, you can encourage your board or general manager to use effective media-relations techniques, to make speakers available for various meetings, and to produce informative, well-designed publications. You can authorize citizen surveys, paying special attention to the acquisition of adequate feedback from all citizens. You can set the tone for the employees of the public service district by emphasizing each individual's importance as a representative of the board. Finally, you can use your personal network to find out how well your local organization's public relations activities are working and provide feedback to help improve them. All of these efforts will help you obtain a better understanding of citizens' diverse perspectives. This understanding will aid you in developing policies that the majority of the constituency will find acceptable.

Being Accessible. As a board member, you must make a genuine effort to be accessible to the public. Being accessible goes beyond complying with sunshine or open meeting laws. Even if closed meetings of various types are allowable by law, think carefully before you hold such meetings; you risk criticism from the media and your constituents. You may be meeting just to plan strategy, but you may find it harder to convince the public of the integrity of your motives if you plan in closed session.

Supporting the Manager's Role. Because effective public relations includes motivating employees and using budgeted resources to collect and share information about ongoing activities, the general manager typically has ultimate responsibility for public relations.

For announcements and major decisions, board members may designate one person, perhaps the chairman, to provide information to the public through the media. The staff's role in public relations is to facilitate the sharing and gathering of information, not to substitute for board members or the general manager.

WV WARN

WVWARN is made up of Water and Wastewater Utilities across West Virginia, assisted by regulatory, technical, and law enforcement agencies. Currently, in addition to regional utilities, WV WARN collaborates with the partners listed below. The following organizations are the Charter Sponsors for WV WARN.

WV DEP **WVDHSEM**

Following the impacts of Hurricane Katrina and then Hurricane Rita, it became apparent that even with the extraordinary efforts of utilities, water associations, the WVDHSEM, the demand for resources and knowing where those resources were available overwhelmed the ability to effectively coordinate the initial response.

Realizing that utilities needed a different approach, the below leaders in the water community and state agencies have joined together to create the West Virginia Water/Wastewater Response Network or WV WARN.

WVAWWA WVETC WVDHHR WVPSC WVRWA RCAP NESC

How to Join WV WARN

Based on three other models, CalWARN, FlaWARN, and TxWARN, WV WARN is designed to provide a utility to utility response during an emergency.

Our mission is to support and promote statewide emergency preparedness, disaster response, and mutual assistance matters for public and private water and wastewater utilities.

The WV WARN Web site does this by providing its members with emergency planning, response and recovery information before, during and after an emergency. As the nationwide WARN system expands, it will become easier to provide mutual aid to other states as needed.

The core of the WV WARN Web site is its emergency equipment database called the Tool Bucket that matches utility resources to a member's needs during an emergency. A member can locate emergency equipment (pumps, generators, chlorinators, evacuators, etc.) and trained personnel (eg. treatment plant operators) that they may need in an emergency.

The WV WARN program provides its member utilities with:

- A standard omnibus mutual assistance agreement and process for sharing emergency resources among members statewide.
- The resources to respond and recover more quickly from a disaster.
- A mutual assistance program consistent with other statewide mutual aid programs.
- A forum for developing and maintaining emergency contacts and relationships.
- New ideas from lessons learned in disasters.

There are two sides to this Web site. The public side is open to anyone to view. This side gives you basic information about WV WARN and how to join.

The second side, the resource database, is only open to members who have signed the agreement, and membership is free!

Please take a moment to explore our Web site! Remember, WV WARN is a direct member to member organization with no middleman or agency to delay getting needed assistance from another utility member. Membership is free and response to requests is voluntary.

For more information, contact WV WARN at info@WVWARN.org

West Virginia is joining the ranks of other states across the country in implementing WARN (Water (and) Wastewater Agency Response Network). A fundamental Steering Committee (which is open for expansion) has been meeting to develop the WV WARN program. WV WARN will provide a way for public and private water and wastewater utilities to quickly receive and provide aid and assistance to one another during times of a disaster or emergency. Membership in WARN is voluntary, free, and provides for making help available to the participants in all kinds of emergency situations or disasters.

Utilities can be proactive in emergency and disaster recovery planning by signing a Mutual Aid and Assistance agreement that defines the terms and conditions under which assistance can be requested and provided. By having a signed agreement in place to reduce administrative conflict, utilities in the network will be better prepared for handling situations rapidly and efficiently while sharing resources.

Participants will be able to access a database of personnel, equipment, materials and other associated service that can potentially be made available to them in their time of need. According to WV WARN Steering Committee Chairperson Bonnie Serrett, “WV WARN is for all water and wastewater utilities no matter what size, large or small. Every system has something they can contribute in an emergency.”