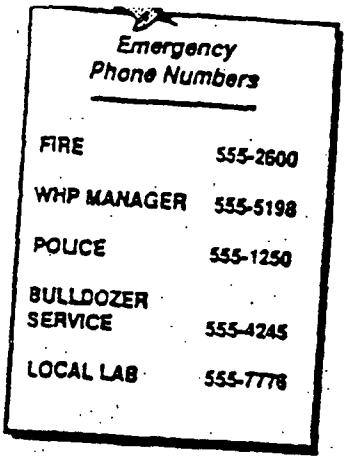
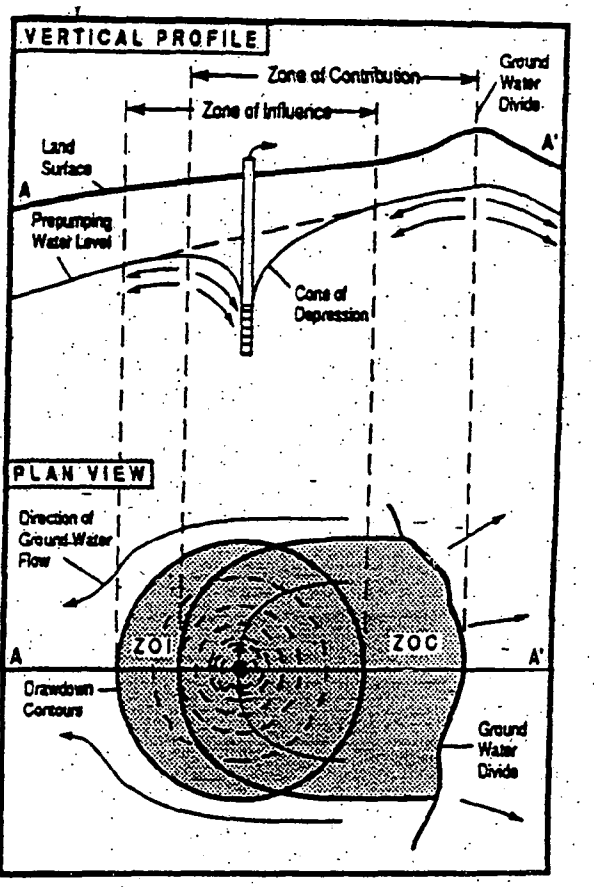
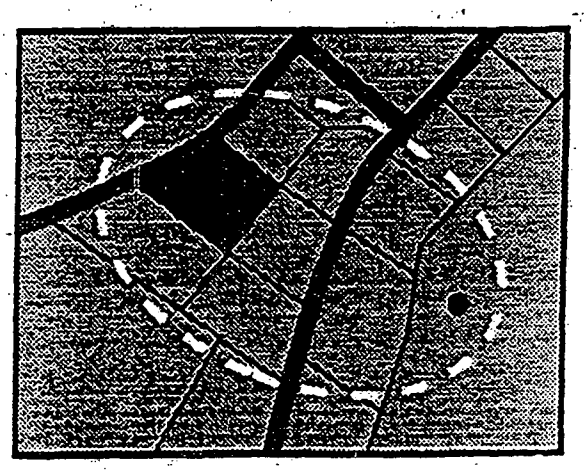
WELLHEAD PROTECTION IMPLEMENTATION TRAINING

Contingency Planning







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Identification of the response team and response team coordinator, how and what agencies, having responsibility for accomplishing the response actions is an essential element of a contingency plan. The plan contains an emergency list of names, agencies, telephone numbers, FAX numbers, and addresses of those whose commitment to the response has been established. Some very simple contingency plans consist only of this list of who to call to get help. This list is subject to change and it is essential that it be maintained and up-to-date. Personnel change and agencies change names, change missions, and move to new addresses. A flow chart showing who has responsibility for each of the response allows the coordinator to manage the response team for timely and complete operation of the response.

Because a contingency plan may not be able to cover all of the details of a potential incident in advance (i.e., there is such a large variety of materials that potentially could be involved in spills), the response team may need assistance to design specific actions for an incident at the time it occurs. For this reason, the contingency plan should include identification of agencies, departments, and consultants as well as the scope of their services and expertise. It also might be useful to include information on sources of financial support for emergency response (e.g., the Federal Emergency Management Agency [FEMA], the Department of Housing and Urban Development, etc.).

It is important that contingency plan information be kept current, because time wasted translates into movement of contamination toward the well. A sound contingency plan should be a"living" document that is constantly being revised. Any revisions changing the potential threats within the WHPA, new technology and approaches to intercept or mitigate contamination, new suppliers, sources of assistance, personnel, agencies and their addresses and phone numbers. Consider the usefulness of a plan that does not take into account the change of tenants in a commercial building from a plumbing distributor to a dry cleaner.

The planning process should include the community from the very beginning and throughout the life of the plan. This helps to assure that the contingency plan is acceptable to the community and excepts the community's perceptions of threat to, and the value of, its water supply. The community may perceive a low value for a threatened well, because of its low yield or already poor water quality and because there are alternative supplies of superior quality available at little additional public expense. Community involvement tends to assure that the inventory of existing threats will be thorough and that the new potential threats will be identified and avoided. It furthers community awareness of the location of the WHPA and the need to be vigilant for conditions which could degrade the water supply. It expands civic responsibility to include stewardship for the community water supply. For example, the citizen who noticed and reported a tanker truck discharging wash

Within the wellhead protection program, a contingency plan is a blueprint of what to do in the event that a recognized potential threat of contamination becomes a realized threat or becomes an imminent threat. A contingency plan prescribes what to do when to initiate action, who would do it, with what tools and materials, and how it would be done. It is prepared in the absence of, but in anticipation of, the conditions requiring the plan, and may never be actually needed or applied.

Contingency planning for wellhead protection anticipates a contamination event and prescribes actions to prevent, or minimize, contamination of the well. For example, the presence of railroad tracks within a WHPA is recognized as a potential threat to water quality of the well and a plan of action (contingency plan) to prevent contaminants from reaching the well is prepared for the possibility that a railroad accident causes the release of contaminants. The plan is activated by knowledge that a spill has taken place or that a derailment has occurred and a spill imminent.

A Spill Response Plan is a type of contingency plan that provides a blueprint of rapid, predetermined and decisive actions to intercept spilled contaminants before they reach a well, before they reach ground water, or even before they are released.

The very first step in developing a WHP Contingency Plan is to inventory the potential threats which are present in the WHPA. In some cases, it is not feasible to eliminate water quality threats from a WHPA. Commonly, potential sources of contaminants were present before the WHPA was delineated or even before the well was constructed. The inventory of sources described in Module 3 is the main source of information for this initial step in the contingency planning process. Identification of the threats can take the form of a "What if" exploration of all the land uses, possible accidents, and possible spills or leaks in the WHPA.

Communities use the planning process to design the responses needed to prevent the contamination or minimize the contamination of the welll, or determines where to get an alternative supply. Developing the plan requires knowledge of the toxicity and transport properties of the contaminant and the volume of it that may reach the well. Case histories of similar known contamination events are extremely valuable in designing and selecting the actions to be taken. Plans developed for other areas are also a source of responses that could be incorporated into a contingency plan, bu they should be adapted to the specific conditions of the threat and hydrology within the WHPA. The responses must be possible within the context of available resources identified in the next two elements.

For uncommon potential contaminants with special physical or chemical characteristics, technical assistance may be necessary to design effective and appropriate responses. Some threats may be too small to warrant a response, and other may be overwhelming as to preclude effective action. Evaluation of the worth of response (whether to take action) should involve the judgement of the

community. The instructor can stimulate discussion by asking examples of contingencies that aren't worth planning for.

For a response part of a contingency plan to be effective, it must have an alarm, "trigger" or signal when to initiate the response. This part of a plan should include a communications (reporting) network and clearly state what conditions will initiate a response, and what the response will be.

The responses to spills in two difference communities illustrate the importance of having a contingency plan. A leaking underground gasoline storage tank was discovered in Community 1, which did not have a contingency plan. A public health official was forced to make a decision while being barraged by a bewildering array of unevaluated information and opinion. He decided to pump the well and see what happened. More $5 million later, the resulting contamination of the well is under control. When a similar event occurred in Community 2, which had a contingency plan, the responsible official followed the plan. He ordered the removal of the contents of a leaking underground tank and then initiated vapor purging of the unsaturated zone above the tank as well as removal of the tank and the contaminated soil. The well in Community 2 never became contaminated. Officials are better able to make judgements of how to respond in an emergency when they are properly informed and have sufficient time to consider all factors. Having a plan to follow further increases the likelihood that the potential for damage will be minimized.

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For example, the citizen who noticed and reported a tanker truck discharging wash water alongside the highway within a WHPA, the chemical plant manager who alerted the contingency plan manager to changes of chemicals used in the plant within the WHPA, or the distributor of auto supplies, who reported that inventory of absorbent clay which he stocks, could be available for the emergency clean-up of gasoline spills. Community awareness and involvement facilitates responsiveness and cooperation to create a more effective wellhead protection contingency plan.

Key Points

- It is essential that the resources for a planned response be available to carry out the response
- The materials and tools must be available
- The know-how must be available
- The bills will have to be paid
- It is important that a contingency plan be changed when the water quality threats change
- The contingency plan must be changed when the people who respond to it change or their phone numbers change
- The response should be kept current with state-of-the-art equipment, materials, and technology to be most effective
- The scope of responses may change in response to the financial resources available
- The planning process should include the community from the very beginning and throughout the life of the plan
- Community involvement means that those who are participating in the planning process are representative of all the interests potentially involved when a potential threat becomes realized (something goes wrong)
- Community participation assures acceptance of the plan (that the planned responses are commensurate with the community's perspectives and values)
- Community participation fosters the public awareness and stewardship for ground water resources.

CONTINGENCY PLANNING CASE STUDY
SIOUX FALLS, SOUTH DAKOTA

The Sioux Falls case study demonstrates the importance of having a contingency plan. In this instance, a potentially disastrous pipeline break spurred the public support needed to develop a contingency plan.

Sioux Falls is located in northeastern South Dakota and has a population of approximately 96,000. The city is almost totally dependent on ground water from the Big Sioux Aquifer for its drinking water. This aquifer is the most accessible and most used water source for the area, but, because of its shallow water table (i.e. less than 20 feet) and its high recharge rate, it is highly susceptible to contamination.

Increased development has resulted in increased demand for water. At the same time, conflicting land uses and land practices have increased the potential for ground water contamination. Sioux Falls is the central warehousing and distribution point in the region for agribusiness-related materials. The city is served by rail and highway routes used to deliver pesticides, fertilizers, petroleum products, organic solvents, and metals for consumption and distribution. The transport over the aquifer of these agricultural and industrial chemicals represents a significant source of potential contamination to the city's public water supply wells.

A map of the wellhead protection area indicates the location of another potential source of contamination: a gasoline transmission pipeline. In April 1987, a break occurred in the pipeline within a half mile of a city well. The pipeline company worked quickly with city and state officials to correct the problem. The pipeline break demonstrated the potential for extensive contamination and damage to the well field and served as a warning to the city that a contingency plan was needed.

In response to concern about the pipeline leak, the city accelerated its efforts to develop a contingency plan. A bill was introduced to the legislature that contained provisions for a comprehensive wellhead protection program, including contingency planning. With strong local support, a contingency plan was developed quickly.

CONTINGENCY PLANNING CASE STUDY
TUCSON, ARIZONA

The problems that must be addressed by contingency plans vary from community to community. Contingency plans should address not just contamination threats but also a wide range of environmental and operational problems. The Tucson case study also provides an example of the importance of strong leadership when developing a contingency plan.

Tucson is a large city in southern Arizona that has a population of approximately 300,000. The city lies within the Sonoran Desert and has a climate strongly influenced by the extensive mountain ranges surrounding the city as well as the long distances from any bodies of surface water. Precipitation averages less than 12 inches per year, and nearly of half of this is provided by violent summer thunderstorms, which frequently result in flash flooding. Therefore, flash flooding is one of the threats addressed in the Tucson contingency plan.

Tucson also had a problem with theft and vandalism around its public water wells. Vandals would break into pump houses to steal well operating tools and equipment. To deal with this problem, Tucson's contingency plan includes keeping extra tools and equipment on hand and constructing a fence around the pump house.

The strong leadership for the Tucson contingency plan came from the Pima Association of Governments (PAG), which is headquartered in Tucson. This was important because several entities are involved in the development of water supplies and provision of water service in the Tucson metropolitan area, including city, county, and private water providers. Prior to PAG leadership, there was considerable ambiguity and confusion among the various parties regarding the roles in the development of a contingency plan ant the benefits from such a plan. PAG was able to bring most of the major water providers together in the planning process by demonstrating the potential benefit to all water providers, regardless of their size or geographic area. This allowed PAG to tap into the resources, knowledge, and expertise of a majority of the water suppliers for the successful completion of a contingency plan.