# Hubbard Drinking Water Protection Plan

# Chapter 5: Management of Potential Sources of Contamination

**Adopted by Hubbard City Council Ordinance #215-98**
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**Hubbard Drinking Water Protection Committee**
**Hubbard Public Works Department**

**(Note: this document contains only Chapter 5 of the Hubbard Drinking Water Protection Plan)**

## INTRODUCTION

This chapter is divided into the three primary land use categories in Hubbard's drinking water protection area: agriculture, industrial/commercial, and residential. Within each category, potential sources of contamination are first identified and then are addressed by formulating goals and related management strategies. Goals are broad vision statements describing desired conditions or activities in the future. They provide direction for the development of management strategies. The management strategies for each goal add more specificity in describing a course of action. Each goal and related cluster of management strategies includes a background discussion that provides the rationale for the goals and management strategies identified for each land use category.

The implementation of management strategies is key to the ultimate success of the Plan. Upon the adoption of the Plan, a Drinking Water Protection Committee (Ongoing Committee) will be formed. This committee will include, but is not limited to, representatives from the industrial, agricultural, residential sectors and the Public Works Department. This Ongoing Committee will meet at least once a year to oversee implementation of the Plan and continue to shape and redirect implementation efforts as necessary.

A meeting with Emergency management staff (fire department and hazardous materials spill responders) will be scheduled to inform them of the location of the protection area to allow quicker response and notification should a hazardous material spill or release occur within the drinking water protection area. These will be integrated into Marion County's Emergency Management Plan. Oregon Emergency Management staff (in Salem at 503- 378-2911) can assist with the development of spill response plans.

## RECOMMENDED ONGOING COMMITTEE MEMBERS INCLUDE:

## AGRICULTURE

Farmers in the Hubbard area have worked with the land, irrigation water, fertilization, and pesticide applications for years. Guarding the health of the land and water is important for the

continued success of the farming operation because quality land and water are what the farming community depends on for its business success. Most farmers are conscientiously striving to do the best they can to protect themselves and others from problems. Through both mandated and voluntary efforts, growers are already applying many best management practices that protect both the health of the land, and the health of the community. The agriculture chapter of this management plan motivates agricultural land users to expand voluntary efforts to provide further protection for Hubbard's drinking water supply.

The committee identified several groundwater risk issues related to agriculture and rural land use.

1. Improperly constructed, maintained or abandoned wells;
2. Chemical handling and mixing;
3. Fertilizer and pesticide mixing and handling near wells, and spills;
4. Chemical applications (fertilizers and pesticides);
5. Equipment repair facilities (risks associated with cleaning, solvents and used substances);
6. Fuel storage (underground fuel tanks (biggest risk) and fuel storage leaking and spills); and
7. Small farms: organic substance problems, organic farming nitrate and waste disposal problems, and small-scale livestock operations.

By taking a proactive voluntary approach, agricultural growers avoid causing drinking water safety problems that might result in potentially reactive regulatory measures. Five goals integrate these areas of concern and are addressed by management strategies designed to reduce the risks associated with farming operations and rural land uses, primarily through education and incentives based programs.

Following is an overview of the inventory as it relates to agricultural uses, and the four goals and related management strategies.

**AGRICULTURE INVENTORY SUMMARY**

Agricultural land use comprises a small percentage of the drinking water protection area. There are several small operations comprised of Christmas tree growers and produce. They produce crops which require irrigation, which puts this small area within the medium potential contamination risk category according to the guidance manual. Irrigation increases the susceptibility of the aquifer by providing more water that can potentially leach chemicals from the soil.

**AGRICULTURE GOALS AND MANAGEMENT STRATEGIES:**

**GOAL** 1: **Establish** a **well health education program informing people about proper well construction, maintenance, and abandonment.**

1. Write a letter to inform farming operations and rural residents what their location within the drinking water protection area is and the importance of their assistance in protecting the groundwater for their own and the community's drinking water supply, with the letter provide a fact sheet with information on proper well construction, maintenance, and abandonment

including:

a. diagram of a properly sealed well;
b. legal basis of properly constructing and abandoning wells;
c. types of well abandonment (temporary and permanent);
d. periodic well inspection basics;
e. water testing procedures and contacts;
f. list of resources for further information;
g. the use of backflow devices ;
h. encourage voluntary home assessment using Home-A-Syst; and
i. request Oregon State University (OSU) Extension assistance in fact sheet foffilation and distribution.

2. Provide property owners with assistance regarding technical assistance and possible incentives regarding proper well abandonment and maintenance.

3. Conduct a survey with property owners to assess how well current irrigation, pesticide and fertilization management practices are helping protect drinking water.

4. Distribute Home-A-Syst information pamphlet that describes the assessment system and to inform property owners of how to order the Home-A-Syst assessment packet.

5. Provide a work session with the Home-A-Syst coordinator.

**BACKGROUND DISCUSSION**

Well health depends upon adequate and appropriate construction, maintenance, and eventual abandonment of the well. Improperly constructed, maintained, or abandoned wells can provide a direct conduit for contaminants to reach the aquifer and pose a liability to property owners.

The purpose of this goal is to inform well owners about the importance of well health and to know what procedures are necessary and the technical resources that are available for the care of wells.

Backflow prevention valves are also an important part of preventing well water contamination.

Chemical application equipment is often filled from faucets that do not have backflow prevention valves. By providing information to the property owners, citizens will be better educated about the hazards of filling chemical tanks from faucets without backflow devices and will be encouraged to purchase backflow devices for faucets used.

The OSU Extension Service developed a homestead assessment system called Home-A- Syst. This program provides an assessment tool for rural residents to use in performing a self-evaluation of potential groundwater risks associated with their residence. The assessment package consists of II worksheets that help assess management practices that can affect drinking water and 9 fact sheets that suggest how to change high-risk practices and where to go for more

information. Although Home-A-Syst is an effective assessment and educational tool, property owners can be reluctant to use it because it is often perceived to be too time consuming. Much of the information in the fact sheets to be developed and distributed in relationship to this goal and the other three goals will be taken from the Home-A-Syst packet. The idea is to initiate awareness and interest with brief information sheets; the longer-range goal is to have property owners conduct a more thorough homestead evaluation using the Home-A-Syst packet.

The fact sheets will encourage rural homeowners and small farming operations to acquire a Home-A-Syst packet. In addition, an existing promotional brochure about Home-A- Syst will further encourage rural residents to conduct a thorough groundwater risk assessment.

**GOAL 2: Inform small farm operators and remind large growers about proper chemical handling, storage and application.**

I. Provide a fact sheet of information regarding groundwater friendly chemical use, including:
   a. keeping chemicals away from wells;
   b. following the label instructions (do not overuse, and use the right product);
   c. encouraging the use of backflow devices;
   d. how to deal with small spills;
   e. non-toxic alternatives to traditionally used chemicals;
   f. encourage voluntary home assessment using Home-A-Syst; and g. request OSU Extension assistance in fact sheet formation and distribution.

2. Provide information at a joint Agriculture-Business/Commercial community meeting about chemical use and its association with groundwater contamination risks. Information can be provided through written material and/or speaker presentations and should include information presented in Strategy 1 and:
   a. application and irrigation practices that reduce nitrate use for specific crops; and
   b. best management practices that reduce the amount of nitrate and/or pesticide leaching (cover cropping, soil analysis, etc. ).

3. Sponsor a hazardous materials round-up that will allow the collection of surplus agriculture chemicals:
   a. research the possibility of coordinating activities with Marion County Solid Waste Disposal Program; and
   b. contact DEQ regarding conducting bi-annual or annual round-up event with the help of community volunteers.

4. Work with farmers to apply best management practices that reduce nitrate leaching.

5. Distribute Home-A-Syst information pamphlet that describes the assessment system and inform property owners of how to order the Home-A-Syst assessment packet.

**BACKGROUND DISCUSSION**

Working with the land is the farmer's livelihood. In most cases, best management practices that protect drinking water are being applied because they help prevent problems to others and make good business sense. Fertilizer and pesticide applications are typical farming practices in order for the farmer to get the best yield on the crop planted. Pesticides include herbicides, insecticides, rodenticides, fungicides, and avicides. The EP A has registered approximately 50,000 different pesticide products for use in the United States. Many are highly toxic and mobile in the subsurface. Large- scale pesticide applicators (farmers and professional applicators) have to be licensed and undergo periodic training to help ensure the safe application and storage of chemicals. These applicators will benefit from educational reminders about the risks of chemical use to potential groundwater contamination. Smaller property owners (who do not necessarily have a license or training) will benefit from factual information about how to safely handle, store, and apply chemicals to reduce the risk to the drinking water resource.

The use of practices that minimize leaching are preferred by growers because they reduce the amount of chemicals used, thus reducing costs and increasing profit margins. Leaching refers to the movement of a substance (fertilizer, pesticides, etc. ) down through the soil, past the root zone and potentially into the aquifer, which is the source of drinking water. Water, either through rain or irrigation, is the primary force driving the movement of these substances through the soil. The extent of leaching varies with different substances, but in general is controlled by many factors. Some of these factors are the amount and timing of substance application, and the amount and timing of water applied after application. In addition, best management practices, such as the use of cover crops or integrated pest management techniques can also reduce leaching. The management strategies for this goal provide information to farmers and rural residents that will help them determine appropriate applications of chemicals and irrigation practices that will minimize leaching.

Chemical storage and handling near the well are also concerns for both large-scale growers and rural residential owners with fewer acres. Well houses can appear to be the perfect, convenient place for storage of chemicals. Often the property owner is unaware of the potential risks associated with such storage. Property owners need to be informed and reminded that chemicals should not be stored or mixed near the well. Removing chemicals from this location will reduce the risk associated with potential spills of concentrated substances. Chemicals that are no longer being used should also be disposed of properly. Currently, chemical containers (emptied and rinsed) can be disposed of twice a year at an event sponsored by the Oregon Agriculture Chemical Association. This plan includes a strategy to have at least one or more annual events that allow small and large scale farm operators to dispose of surplus chemicals.

The EQIP was recently established under the 1996 Farm Bill. The program is designed to provide technical, financial, and educational assistance to farmers to address significant natural resource concerns and objectives in priority areas. With the delineation of Hubbard's drinking water protection area, priority areas can be defined for potential EQIP funding.

**GOAL 3: Reduce the risks to groundwater associated with equipment repair facilities and fuel storage.**

1. Provide a fact sheet with information about:
    a. the vulnerability of groundwater to cleaning solvents and fuels;

b. proper use, storage, and disposal of cleaning solvents and other vehicle repair and maintenance supplies;

c. environmentally friendly alternatives to traditional cleaning solvents;

d. recycling resources for cleaning solvents and used equipment fluids (oil, anti-freeze, etc.), including a list of suppliers that recycle or dispose of solvents;

e. Oregon laws and owner liabilities associated with underground fuel storage tanks; and

f. how to avoid tank leaking and spills; and where to locate above-ground storage tanks from a groundwater contamination risk perspective.

2. Distribute Home-A-Syst information pamphlet and inform property owners on how to order the Home-A-Syst assessment packet:
    a. Hubbard will mail the pamphlet that was developed by the OSU Extension Service or request that the OSU Extension Service Home-A- Syst program focus marketing efforts in the drinking water protection area.

**BACKGROUND DISCUSSION**

Many farming operations include on-site equipment repair and maintenance shops. These facilities can contain potential groundwater contaminants such as: solvents; metals; oily metal shavings; lubricant and cutting oils; degreasers (e.g. tetrachloroethylene); and metal marking fluids. The purpose of this goal and related management strategy is to help ensure that these substances do not contaminate the aquifer. Owners and managers of these repair and maintenance facilities need to be aware of potential risks of commonly used substances and best management practices that minimize these risks. One of the biggest barriers for the property owner is being able to properly dispose of and/or recycle used substances. By encouraging recycling practices and developing a recycling resource list, property owners will be better informed as to how to dispose of used substances safely.

Many rural homeowners and/or farm operators have either underground or fuel storage tanks for heating or vehicle fuel purposes. Fuel storage in both underground and aboveground tanks pose risks to groundwater if leaking occurs. By educating property owners about the risks and liabilities associated with fuel storage, they will be encouraged to properly abandon underground storage tanks and properly install aboveground tanks.

**GOAL 4: Educate small farm operators, organic farmers, and rural residents about groundwater contamination risks and best management practices to reduce those risks.**

I. Produce a letter to inform farmers and rural residents of their location within the drinking water protection area, and the importance of their assistance in protecting the groundwater for their own and the community's drinking water supply, with the letter provide a fact sheet with information regarding:
    a. nitrate problems associated with organic waste and manure piles;
    b. review of hazards associated with chemicals commonly used in organic farming;
    c. small scale livestock operation risks;
    d. best management practices that reduce risks of groundwater contamination from organic substances and encourage voluntary home assessment

using Home-A-Syst; and e. private well ownership.

2. Distribute ODA's Water Quality Protection Guide to rural residents.

3. Distribute Home-A-Syst information pamphlet and how to order the Home-A-Syst assessment packet.

**BACKGROUND DISCUSSION**

This goal and related management strategies address potential contamination problems associated with organic substances such as livestock waste and decomposing plant material. Although the Hubbard groundwater protection area does not include any large- scale livestock operations, even a few animals can pose risks such as: nitrates, coliform and non-coliform bacteria, viruses, and Giardia. In addition livestock owners often use chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests on their animals (Chemical applications and storage are included in Goal #2).

Decomposing plants and animal manure can elevate nitrate levels in the soil that can be carried into the aquifer if the nitrogen is not used by living plants. This can create a problem where livestock manure and/or dead plant material is piled and not covered or contained on an impervious surface. By providing factual information on how to manage composting areas, property owners can reduce the risks associated with organic substances. Although the quantities of chemicals used and stored by rural residents are often lower than a farming operation, rural residents are usually not trained or licensed in safe and appropriate chemical use. Providing an array of information about potential threats and practices to minimize those threats will help rural residents take action to ensure adequate protection.

**GOAL 5: Develop a recognition program demonstrating that the agriculture community is active in groundwater protection and encouraging further protection measures.**

**RELATED MANAGEMENT STRATEGIES:**

I. Develop criteria for becoming a Groundwater Guardian farmer:

a. one-on-one consultation with an extension agent;
b. demonstrated willingness to cooperate, which was measured by the number of positive responses to survey questions;
c. maximizing use of Best Management Practices (BMPS) identified in the drinking water protection area agricultural survey; and
e. in compliance with all existing regulations.

2. Provide signs or some less public form of recognition for Groundwater Guardian farmers.

**BACKGROUND DISCUSSION** :

Farmers should be recognized for making important contributions in protecting Hubbard's drinking water. Recognition programs acknowledge and reward growers for voluntarily applying practices

that are in the best interest of the community. This develops a greater sense of understanding and cooperation with local area farmers and the rest of the general community. Public recognition also generates community awareness that everybody is working together and doing their part to protect groundwater.

An agriculture recognition program needs to take into account the sensitivity farmers might feel to having increased public attention. In recent years, the agriculture community has come under increased scrutiny by the public. The shift in public perception has resulted in the agricultural community being increasingly regulated and has also placed negative attention on farmers. Many farmers no longer want any additional attention, whether it be positive or negative. A potential concern is that even positive attention can lead to something negative. For this reason, the type of recognition received is up to individual farmers. Some may want a Groundwater Guardian sign displayed at their farm site, whereas others may prefer another form of acknowledgment such as a personalized plaque.

Like most recognition programs, criteria will be established by the committee that farmers must meet to qualify for being recognized as being groundwater friendly. Most of these criteria are not specific practices as much as general actions that demonstrate a commitment and openness to applying practices that protect groundwater. Recent surveys in the Lane County area indicate that recognition efforts have more credibility if the certification process is not completed by the agricultural community itself. Rather, a community outreach, involving agriculture and non-agriculture representatives would be better accepted by the public.

**COMMER CIAL/INDUSTRIAL**

Four goals will lead to greater assurance of groundwater protection for businesses in the drinking water protection area. For each goal, more specific management strategies, actions, and tasks that are directed at achieving the goal have been identified. The goals and management strategies are incentives-based rather than mandatory .They focus on education, technical assistance, recognition, and potential cost-sharing with public agencies. Incentives motivate rather than demand business owners to initiate best management practices on their property. The following is a summary of the industrial/commercial inventory and the committee's recommended goals and management strategies for the Hubbard drinking water protection area.

**COMMERCIAL/INDUSTRIAL INVENTORY SUMMARY:**

The existing drinking water protection area contains eighty-one (81) businesses primarily located along 99E and in the Industrial Park near the southeast comer of the ten-year TOT. Within the drinking water protection area, there are thirty-eight (38) businesses considered high risk, twenty-two (22) moderate risk, and twenty-one (21) low risk for potential groundwater contamination.

**COMMERCIAL/INDUSTRIAL GOAL AND MANAGEMENT STRATEGIES**

**GOAL 1: Inform businesses about the need for groundwater protection and facilitate changes that reduce the risks of groundwater contamination.**

**RELATED MANAGEMENT STRATEGIES**

1. **Sponsor an open house type of event and invite DEQ to talk with business managers about pollution prevention practices and available technical assistance.**
    a. Invite a DEQ pollution prevention program representative to talk with business managers and owners within the entire industrial park area;
    b. Send letters to businesses in the entire Hubbard area about the need for groundwater protection, their relationship to the existing city wells, and resources available to identify pollution prevention techniques for individual businesses (The letter should stress that this is not a mandatory program);
    c. Hazardous waste collection opportunities (Metro and private companies);
    d. Proper solid waste management practices; and
    e. Who to call in the event of a spill; integrate business' contingency plans with the City's;
    f. Contamination threat from storm water runoff and how to reduce the threat;
    g. Information on resources available regarding pollution prevention;
    h. Subcommittee will draft letter and information flyer to send to these businesses (See appendix for preliminary draft);
    i. Provide basic groundwater information stressing the relationship between groundwater quality and land use activities; and
    j. Announce the availability of other workshops that will be held to deal with general awareness towards hazardous waste.

2. **Establish a mentoring program with large industries helping the smaller, less regulated businesses in the community. This action is a follow-up to the open house session.**

    a. Develop a list of the industrial/commercial committee and other large business owners that can help smaller businesses develop groundwater protection plans;
    b. Assist small businesses in developing a spill response plan;
    c. Share spill response resources with small businesses; and
    d. Sponsor joint employee training workshops to raise awareness of groundwater and potential land use impacts. Workshops should include topics of pollution prevention and general awareness towards hazardous waste.

**BACKGROUND DISCUSSION :**

Many commercial/industrial activities that pose risks to groundwater are regulated through laws such as the Toxic Substances Control Act (TSCA) and the Resource Conservation and Recovery Act (RCRA). However, even facilities required to have permits for building, material, storage, or waste discharge cannot be assumed to pose no risks to groundwater. Most of the other regulations applicable to commercial and industrial facilities rely on responses to contamination events, rather than on preventing problems. Hubbard's commercial/industrial management

strategies focus on pollution prevention and education.

Smaller businesses tend to be less regulated compared to larger businesses because they use less chemicals and generate less hazardous waste. However, although they may use or generate less, some of these businesses still present a moderate risk to a clean drinking water supply. Although many protection measures already exist, larger businesses can take an active role in mentoring the smaller, less-regulated businesses. Establishing, partnerships can also playa key role in addressing non-point pollution. With the support of local businesses, local government, and state or federal funding assistance, area-wide solutions are possible.

The purpose of this goal is to reduce the risks of groundwater contamination by businesses in the drinking water protection area by educating and helping those businesses in developing groundwater protection strategies that supplement the regulatory structure. An emphasis of this goal and related action items is in developing partnerships with and between larger industrial complexes, smaller businesses, and state agencies.

Another focus of this goal is to provide education and technical assistance to business owners by providing how-to information and in linking the property with technical assistance available at the state, or federal level. Education and technical assistance can help the business owner explore alternatives that might not otherwise be considered.

A groundwater open house/symposium event will be scheduled for Hubbard businesses and will be the education catalyst for many other management strategies. Business owners and managers can learn about technical assistance available through DEQ Pollution Prevention Program and local resources available to help them address local needs. DEQ Pollution Prevention, Waste Reduction Program offers businesses free technical assistance regarding BMP's for handling chemicals that could be harmful to groundwater. On-site technical assistance is designed to provide businesses with alternative regulations, while protecting groundwater. In many instances, DEQ's technical assistance results in lower costs and less regulatory burden to the business.

**GOAL 2: Establish community-wide recognition that businesses are actively engaged in groundwater protection.**

**RELATED MANAGEMENT STRATEGIES**

I. Provide information to the community about what practices are already in place by industrial/commercial businesses:
    a. Write newsletter articles; and
    b. Use public postings.
2. Establish a business recognition program for businesses that are applying good groundwater pollution prevention practices:
    a. Inform businesses about the link between pollution prevention and consumer preferences to support green businesses;
    b, LInk wIth Oregon State Green Permit Program for qualifying to become a Groundwater

Guardian businesses;

c. Publicly recognize businesses that are helping other businesses protect the groundwater resource;

d. Provide a plaque. sign, or door sticker showing that the business is groundwater friendly; and

e. Provide emblem or other symbol that businesses could use in advertisements.

**BACKGROUND DISCUSSION** :

Most businesses, through both mandated and voluntary efforts are already applying BMP's (Best Management Practices) that protect drinking water. The purpose of this goal is to publicly recognize these businesses for their contributions and identify additional activities that could be accomplished above and beyond just those that are currently regulated. Community residences and consumers should know that the business community is taking an active role in reducing risks to drinking water.

Recognition programs can serve as an incentive by providing favorable publicity to those involved. As with most recognition programs, standards must be established and met for a business to qualify. The certification process must be controlled at the community level, outside businesses themselves. Technical assistance will be offered as a component of the recognition program so that the businesses can comply with the standards that are set. Recognition programs tend to have a snowball effect in the sense that as awards are given or signs displayed, others want the same recognition. For this reason, recognition programs also tend to have an educational benefit as others learn about the types of practices that are beneficial to drinking water protection.

The business recognition program in Hubbard links with programs already established or being established on the state level. Business owners will be informed of opportunities to apply for the Governor's Award for Toxic Use Reduction, an annual award given to businesses with significant reductions in their use of toxic material. Currently, DEQ is developing a Green Permit business recognition program that businesses in Hubbard will be encouraged to be involved with.

**GOAL 3: Promote proper disposal of hazardous waste.**

Threats to groundwater from industrial and commercial land users is primarily related to generation, storage and disposal of hazardous material. Hazardous substances associated with industrial and commercial use can be hazardous waste, mechanical repair and maintenance products, and storm water runoff carrying pollutants such as petroleum, pesticides and fertilizers. Improper storage and disposal of chemical products are also a threat to groundwater .

I. Encourage the City to establish local hazardous waste disposal opportunities in which businesses are permitted to participate.

2. Provide information to businesses on how to minimize and dispose of hazardous waste through such strategies as:

    a. Continue regular hazardous waste events;

    b. Publicize such events through flyers, press releases, notices in the city newsletter;

c. Develop and distribute education material specifically covering hazardous waste management;
d. Agency contact;
e. Private Businesses (to include all private businesses in the area); and
f. Insurance company or underwriter.

**GOAL 4: Generate awareness of storm water best management practices that can be applied by individual businesses or the Hubbard Public Works Department.**

1. Encourage Public Works Department to examine possible area-wide treatment systems such as: Oil/water separators, filter strips, grass swales, and sand filters.
2. Develop a fact sheet for businesses to provide information on storm water treatment.
3. Develop a fact sheet about basic storm water practices.
4. Request that DEQ give priority to reviewing and monitoring permits of businesses in the drinking water protection area that are required to have storm water discharge permits.
5. Consider investigating the possibility of developing a systems development charge and/or a storm water system user fee to pay for water quality improvements in the storm water conveyance system and educational components of this goal.

**GOAL 5: Publicize proper maintenance and decommissioning procedures for septic systems and private wells in the industrial and commercial area.**

The density of septic systems can also have a strong influence on nitrate levels. Septic systems contribute to nitrate levels because the drain field allows effluent to percolate into the soil, even if the tank is periodically pumped.

1. Strategies
    a. Conduct an inventory of existing septic systems;
    b. Compile a mailing list of property owners with septic systems; and
c. Provide incentives for switching to city sewer;
2. Procedure for Decommissioning
    a. The tank(s) cesspool or seepage pit shall be pumped by a licensed sewage disposal service to remove all septage; and
    b. The tank(s) cesspool or seepage pit shall be filled with reject sand, bar run gravel, or other material approved by the agent, or the container shall be removed and properly disposed of).
3. Abandonment of Wells:
    Permanent Abandonment; 690-220-030 any well that is to be permanently abandoned shall be completely filled in such a manner that vertical movement of water within the well bore, including vertical movement of water within the annular space surrounding the well casing, is effectively and permanently stopped. If a dry or non-producing well is to be permanently abandoned, it shall be abandoned in accordance with these standards:
        a. State Auth: ORS 536.090 & 537.795; Hist: WRD 3,£ & e. 2-18-77; WRD 9-1978,£12-12-78, e.I-I-79; Amended & Renumbered from 690-63-010 by WRD 13-1986,£10-7-86,e.II-I-86; WRD 8-1993,£12-14-93, cert. e 1- 1-94 see exhibit xx.

**RESIDENTIAL**

People need to know that their groundwater is a valuable and vulnerable resource. They also need to know what they can do, or not do, to help protect this resource. Many people are unaware that some common activities, such as housecleaning or gardening, may involve toxic chemicals that could have serious impacts on groundwater quality if overused or improperly disposed. Very small amounts of certain contaminants can pollute an entire community's groundwater supply, as can the cumulative effect of numerous less odious sources. To help prevent groundwater contamination, community members need to be educated about how their actions can affect groundwater. Education can lead to understanding, and understanding can lead to behavioral changes that help reduce the risk of groundwater contamination. Furthermore, education about the value and vulnerability of Hubbard's groundwater has the potential of providing far-reaching benefits as people bring this awareness to their current and future jobs in business, industry and agriculture.

**RESIDENTIAL INVENTORY**

All four of Hubbard's current wells are located within the residential heart of the town. The potential contamination risks from residential sources is considered moderate, so the comparatively large number of such sources in the vicinity of city wells suggests an effective residential educational program can reduce the risks considerably.

**GOAL 1: Increase awareness among community members about groundwater vulnerability, residence-based sources of contamination, and how to reduce the potential for contamination.**

The purpose of this goal is to increase community awareness for people both living and working in the Hubbard area as to the value and vulnerability of our groundwater resource. With increased awareness and knowledge of this resource, community members can personally take action to protect their groundwater resource. Outreach efforts will educate the community on:

a. The vulnerability of Hubbard's groundwater;
b. How each citizen's actions can affect groundwater quality;
c. Why it is important to reduce the cumulative effects of groundwater impacts;
d. What the consequences of groundwater contamination could be;
e. Tips on how each citizen can reduce the likelihood of contributing contaminants to the groundwater; and
f. Resources available to citizens and what to do if a spill occurs.

**RELATED MANAGEMENT STRATEGY**

I. Assemble a library or a database of basic educational information, facts, and handy hints for groundwater protection. Distribute this information through such means as:
    a. Ongoing short articles in the Hubbard Newsletter;
    b. Distributing mini-posters, refrigerator magnets, etc. with contact phone numbers which can be posted in homes and businesses; and
    c. Sending press releases to the local newspaper, cable TV, etc.

2. Erect signs informing people they are in a groundwater protection area.
3. Institute a storm drain stencil program.
4. Provide assistance with the help of OHD and DEQ to present lessons or assemblies on groundwater basics to the school children in the North Marion School District.5. Continue to provide well water awareness, educational material, and possibly expand well water testing at local activities such as the Hubbard Hop Festival.

**GOAL 2: Promote proper disposal of hazardous material.**

Threats to the groundwater from residential land users primarily relates to the use, storage and disposal of hazardous materials. Hazardous substances associated with residential use can come from household hazardous wastes, mechanical repair and maintenance products, lawn and garden care products, swimming pool maintenance chemicals, and storm water runoff carrying pollutants such as petroleum, pesticides, fertilizers, etc. Improper storage and disposal of products such as these are a threat to groundwater.

1. Continue regular household hazardous waste round up events.
2. Publicize such events in the local newspaper, posted notices throughout the city, .flyers, and the city newsletter.
3. Develop and provide educational material on proper storage and disposal of household hazardous waste.
4. Periodic reminders through newsletter.

**GOAL 3: Publicize proper maintenance and decommissioning procedures for private wells and septic systems in the residential area.**

Well health depends upon the adequate and appropriate construction, maintenance, and appropriate abandonment of the well. Improperly constructed, maintained, or abandoned wells can provide a direct conduit for contaminants to reach the aquifer .

The density of septic systems can also have a strong, influence on nitrate levels. Septic systems contribute to nitrate levels because the drainfield allows effluent to percolate into the soil. This occurs even if the tank is properly maintained through periodic pumping. Housing developments greater than one or two units per acre that rely on septic systems can be of moderate to high risk because of the potential for elevated nitrate levels. A significant number of septic systems within the 2-year time of travel may also pose a threat of viral contamination. The purpose of this goal is to inform well and septic system owners on the importance of well and septic system health and to know what procedures are necessary and the technical resources available in order to provide proper care and ultimately proper abandonment.

**RELATED MANAGEMENT STRATEGIES:**

1. Inventory existing wells and septic systems in the primary time-of-travel zone.

2. Compile a mailing list of property owners with wells and septic systems.

3. Discourage construction of new wells and septic systems in the ten-year-time- of-travel zone.
4. Provide incentives for switching to city water and sewer service.
5. Provide educational material and information on available technical assistance regarding well and septic system maintenance and decommissioning.

**FUTURE POTENTIAL CONTAMINATION SOURCES**

Future potential contamination sources will be addressed in the planning stages of new development to ensure awareness of the City's Plan and their proximity to the protection areas. The City's Business List will be reviewed bi-annually, with new businesses being given an information packet regarding the protection of the City's drinking water.

**TIMELINE**

**TO BE COMPLETED AT 2003 ANNUAL MEETING**