

# Springfield Drinking Water Protection Plan

Prepared for City of Springfield Planning and Development  
Department Springfield Utility Board

Prepared by Lane Council of Governments  
and  
Springfield Utility Board

Adopted  
May 17, 1999

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

## Chapter 5: Management of Potential Sources of Contamination

In this chapter, potential sources of contamination are addressed by goals and related management strategies. Goals are broad vision statements that describe desired conditions or activities in the future. They provide direction for the development of management strategies. The management strategies for each goal more specifically describe a course of action.

Goals developed by the Springfield Drinking Water Protection Citizen Task Force (Citizen Task Force) are listed below in order of priority. The Citizen Task Force prioritized these goals without information on their relative costs and benefits. It is important to emphasize that the first two goals (Public Education and Overlay Zone) received a score in the prioritization significantly higher than the remaining recommendations. public education and the-adoption of an overlay zone were intended as the key recommendations of the Citizen Task Force (Please refer to the *Citizen Task Force Recommendations for Springfield Drinking Water Protection Plan* for results of Citizen Task Force prioritization process, December 1997).

1. implement a Public Education Program
2. Adopt a Drinking Water Protection Overlay Zone
3. Develop and Implement a Groundwater Monitoring Program
4. Enhance the Existing a Hazardous Waste Collection Program
5. Develop and Implement a Septic System upgrade/maintenance program
6. Use and Enhance Existing Spill Response Plan
7. Form Public-Private Partnerships
8. Implement a Water Conservation Program
9. Use Property Purchase and Donation to Provide Protection Areas

During the prioritization process, the Citizen Task Force offered the following additional recommendations for which there was general consensus of support, although they were not ranked with the others as separate alternatives. These additional recommendations are discussed at the end of this chapter.

- Intergovernmental coordination
- Stormwater management
- Abandoned wells
- New well site location

## Goals and Related Management Strategies

### Goal 1: Implement a public education program.

The citizen Task Force's highest priority was to develop and implement a public education program that would include the following four components, in order of priority.

1. Comprehensive public education program
  2. Notification
  3. Technical assistance
  4. Signs
1. Develop a comprehensive public education program that would include the following activities:
    - Set aside funds for a coordinated-program that integrates all water aspects (e.g., drinking water, stormwater, wastewater); develops a different approach for different-age groups and land uses, targeting the greatest efforts toward school children and high-risk zones; uses the media; encourages volunteers to monitor; and draws from cost-effective approaches and materials used elsewhere.
    - Identify the areas at greatest risk to the aquifer and focus public education and technical assistance efforts in the 1-year time-of-travel (TOT) zone, including sending a message to new and existing businesses and property owners about which activities are allowed-
    - The program could continue the work that Project WET and the McKenzie Watershed Council have been doing.
    - Increase education about Lane County's hazardous materials collection program.
    - For businesses, there could be *industrial men to ring zones* in which large industries with technical expertise who have *been there* mentor smaller ones on best management practices (BMPs).
    - The program should organize volunteers to monitor drinking water quality.
    - Prepare displays and models to use in special events conducted by the program or at other public events such as city and county public works days and local fairs. Informational hand-outs can be prepared and made available at these events and also at the front desk of the Planning Department at City Hall (to be handed out to permit applicants) and at local utility offices. These materials would explain activities that affect drinking water quality and would be copied from other communities to the extent possible.
    - Use the local media, including newspapers, radio and television, to raise awareness about drinking water protection and about where to go for more information.
  2. Provide notification to people in the drinking water protection area.
    - Contact everyone in the drinking water area (via utility bills, school take home notices, mailers, etc.). Target well owners and inform them of BMPs and proper abandonment procedures.
  3. Provide technical assistance.
    - Use existing technical assistance programs of the Oregon Department of Environmental Quality and Oregon Department of Agriculture to encourage BMPs, especially in the 0 to 5-year TOT zone.
  4. Use signs to increase awareness.

- Use billboards on freeways and major transportation routes, signs at businesses and stores, and messages at card locks or gas pumps to raise awareness about drinking water protection in general and about specific products and alternatives. Change signs occasionally. Use donations or ask sign companies for temporary use. Specific examples suggested were;
- *Adopt a Well* program.
- Placing sign at businesses similar to the one at Farmers' Co-op on 30th and Olympic Street.
- Electronic message at card locks or gas pumps ( on the gas card reader)-
- At point of sale; where oil, chemicals, paints, or other hazardous materials are sold. Signs could emphasize, *Try to use an alternative that won't produce a hazardous waste* and suggest alternatives.
- Install Burma Shave style of signs in the protection areas.
- *Entering Groundwater Protection Zone* signs on freeway.
- Large billboard on 1-105, Beltline, and Thurston area.

## **Goal 2: Adopt a drinking water protection overlay zone.**

The Citizen Task Force's other highest priority was for the City of Springfield to adopt a *Drinking Water Protection Overlay Zone* for the combined zone of contribution and to refer the overlay zone to the City of Eugene and Lane County for adoption and application to areas that are in their jurisdictions. (The overlay zone's score in the ranking of alternatives differed from public education by just two points). Businesses and property owners that provide scientific evidence that demonstrates their property is not in the regulated TOT zones would be exempt.

The Citizen Task Force agreed that the overlay zone should apply to both existing and new businesses, but most members recognized the need to lessen the burden on existing businesses that might need to relocate as a result of the regulations. For this reason, some Citizen Task Force members agreed that large commercial nodes with expensive infrastructure, that pose a potential risk to the aquifer, would have the option of working with local agencies to relocate a well that would affect their operations by sharing in the costs of relocation. For example, businesses in the commercial node might pay the costs to close down the existing well (possibly through a bond paid to the city) and develop an equitable way to replace the well.

The Citizen Task Force generally agreed that the overlay zone would contain the following five components, in order of priority. (One Citizen Task Force member favored a more incentive-based approach over strict regulation in the district.)

1. Prohibitions
2. Standards
3. inspections
4. Monitoring
5. Transport

### 1. Prohibit high-risk uses.

- Prohibit new use of *sinkers*, (i.e., hazardous chemicals such as Dense Non-Aqueous Phase Liquids (DNAPLs) that are heavier than water, which sink in the aquifer and are very difficult to clean up) in the 0 to 5-year TOT. Phase out existing uses of sinkers over time in the 0 to 5-year TOT. (The prohibition applies to TOT zones for existing and new

businesses, inconsistent with the Citizen Task Force direction to treat these two groups the same, although the initial Citizen Task Force recommendation was 1 to 10- year TOT for new uses.)

- Prohibit high-risk uses in the 1-year TOT zone; for existing businesses, allow a longer
- phase out time for those with a high level of protection in place than for those with a low level of protection.
- When higher risk uses convert ownership, they must convert to an allowed use (Citizen Task Force members requested information on the number of properties that would be affected by this recommendation. Map 8 shows the number of tax lots by zoning in each TOT zone. Note that the tax lots are not cumulative, e.g., to determine the number of tax lots in the O to 5-year TOT zone, one must add the five year to the one year. This information provides an indication of the potential scope of impact)

2. Develop standards.

- Apply stricter standards in the O to 5-year TOT zone to discourage high-risk businesses from locating there.
- In the 1-year TOT zone, set storage requirements and a threshold for the amount of hazardous materials stored on site (The Citizen Task Force noted that the threshold should be higher than Renton, Washington's, which was considered to be too low)..
- Require tight pipe sanitary and storm sewers for new construction and retrofits of existing construction.
- Address use of chemicals on lawns.

3. Implement an inspection program to regulate use of hazardous chemicals in the O to 10-year TOT zone.

4. In the O to 5-year TOT zone, require monitoring by new and existing high-risk uses.

5. Regulate hazardous materials transport.

- Regulate hazardous materials transport in the overlay zone, with greater restrictions in the O to 5-year TOT zone.
- Limit transport of chemicals in the O to 5- year TOT zone; including transport by rail.
- Consider limiting hazardous travel to certain hours of the day when spill response is available.
- Develop hazardous materials transportation routes.

### **Goal 3: Develop and implement a ground water monitoring program.**

The Citizen Task Force recommended a monitoring program that includes all drinking water protection area delineations inside the Drinking Water Protection Overlay Zone (Wellhead delineations are areas shown on a map that depict the extent, orientation, and boundaries of a wellhead protection area using such factors as geology, aquifer characteristics, well pumping rates, and TOT.) and possibly individual potential sources of contamination. The frequency of the tests and contaminants to be evaluated needs to be determined. The monitoring program includes the following three components, in order of priority .

1. Comprehensive monitoring program
2. Sampling during investigation
3. Sampling during clean up

1. Establish a comprehensive monitoring program.

- Establish a monitoring well network. The network should include wells owned by the water suppliers and those required on private property by the Department of Environmental Quality (DEQ) or through overlay zone requirements for new or modified high-risk activities in the drinking water protection areas.
- Evaluate risk and develop a monitoring plan to detect intentional damage or contamination to the wells and aquifer .
- If BMPs are required at a facility, they should also be required to properly maintain the BMPs installed, especially oil/water separators in parking lots and in containment areas. This would include inspection to determine and enforce compliance.

#### 2. Sample Chemicals of concern during site investigation

- Require that samples for chemicals of are taken during site investigation. (Chemicals of concern are chemical contaminants that are a risk to the public water supply which have been identified in the aquifer and are originating from an unknown source or may be coming from more than one source.) Whenever samples are collected during a site investigation or clean-up and follow-up monitoring, results of this sampling must be provided at no additional cost to the Drinking Water Protection Program.

#### 3. Sample during clean up

- Require businesses conducting clean-up activities to provide sample results of all analyses to the monitoring program at no additional cost to the program.

### **Goal 4: Enhance the existing hazardous waste collection program**

The Citizen Task Force recommended the following four enhancements to Lane County's hazardous waste collection program, in order of priority .

1. Increased frequency and flexibility
2. Demand management
3. Evaluation
4. Increased program funding

#### 1. Increased frequency and flexibility of hazardous waste collection

- Conduct the current program more often and make it more flexible by having more drop-off locations. Increasing drop-off locations is intended to encourage people who move to drop off paints and other household hazardous materials so they do not get left behind for the next occupant.
- Create an amnesty program for chemicals stored in drinking water protection areas now that are not being disposed of due to high costs.

#### 2. Hazardous waste demand management.

- Change the system, or encourage the system to change, to reduce quantities of hazardous materials purchased. For example, discourage homeowners from purchasing greater quantities than needed.

#### 3. Evaluate the current program and implement improvements.

4. Increase program funding. Additional funding for-the program is needed to provide financial assistance to small businesses to reduce the costs of disposal and for an assistance program to remove underground storage tanks (e.g., home heating oil tanks and agricultural fuel tanks) that are not regulated.

## **Goal 5: Develop and implement a septic system upgrades/maintenance program.**

The Citizen Task Force forwarded the following two recommendations in this category , in order of priority:

1. Inspections and maintenance requirements.
2. Septic tank regulations.

1. Work with Lane County to adopt an ordinance of inspections and maintenance requirements on existing septic systems.
2. Allow no more than one septic tank per acre in the county on property within the zone of contribution.

## **Goal 6: Use and enhance existing spill response plan.**

The Citizen Task Force supported the following aspects of spill response, in order of priority.

1. Existing plan
2. Spill diversion and containment
3. Mapping
4. Hot line

1. Recognize and support continuation of the existing Spill Response Plan and support a continuous review process.
2. Construct spill diversion and containment structures at wellheads and along freeways.
3. Continuously update storm sewer system maps and integrate into the geographic information system (GIS). Continue to provide the fire department with good maps of the storm and sanitary sewer systems.
4. Set up a regional hotline spill number, similar to the City of Eugene' s.

## **Goal 7: Form public-private partnerships.**

The Citizen Task Force forwarded the following three recommendations, in order of priority .

1. Public.-education by private sector
2. Public-coordinated partnerships
3. Business recognition program

1. Encourage public education by the private sector, for example:
  - Hardware stores could place signs or education brochures to identify replacement (i/ chemicals that are as effective but less hazardous.
  - Displays and seminars presented by home improvement stores could address contamination routes, drinking water protection and related topics; or could allow local government staff to give seminars:

- Fuel oil suppliers could distribute information concerning overfills and spill containment.
2. Establish public-coordinated partnerships, for example:
- Local governments could coordinate meetings of businesses to discuss ways to protect drinking water, for example:
  - Successful storage and handling practices. .A local materials exchange program.
  - Establishing ways businesses can assist with public education programs.
  - Setting up a resource center and/or forums for small businesses
  - Partnerships with agricultural chemical suppliers to collect chemical containers and excess agricultural chemicals.
  - Requiring the manufacturer to take back empty hazardous materials containers (e.g., by using a deposit system or not purchasing from makers that do not participate).
3. Establish a business recognition program in which the public sector recognizes private sector efforts to protect groundwater through an awards program or with signs that acknowledge their efforts.

### **Goal 8: Implement a Water Conservation Program.**

The Citizen Task Force forwarded the following four recommendations, in order of priority .

1. Water demand management
  2. Rate structure changes
  3. Piping loss reductions
  4. Rebate program
- 
1. Implement the recommendations of a previous Springfield Utility Board (SUB) Citizen Task Force on water demand management.
  2. Direct water suppliers to eliminate the rate structure that encourages water use.
  3. SUB should decrease water loss from piping.
  4. Recommend water suppliers to develop a rebate program for water-efficient appliances.

### **Goal 9: Use property purchase/donation to provide protection areas.**

The Citizen Task Force forwarded the following four recommendations, in order of priority.

1. New wells
  2. Land set-asides
  3. Conservation easements
  4. Voluntary deed restrictions
- 
1. Purchase sites now for future wells.
  2. Encourage set-asides in large tract developments that provide open space, wetlands, and riparian areas for aquifer protection.
  3. The public sector would coordinate and facilitate conservation easements for integrated water

management in drinking water protection areas for reimbursement or donation as a tax write-off. The Citizen Task Force, overall, favored using easements instead of property purchase for protection in wellhead areas.

4. Encourage voluntary deed restrictions that are protective of the aquifer .

## **Goal 10: Consider Additional Recommendations**

The Citizen Task Force forwarded the following recommendations regarding:

1. Intergovernmental coordination,
2. Stormwater management,
3. Abandoned wells, and
4. Evaluation of new well sites.

The Citizen Task Force considered these recommendations to be very important, although they were not included as separate options in the initial list of alternatives to be prioritized.

1. Encourage intergovernmental coordination. The City and local utilities should coordinate to protect drinking water, as follows:

- With the Environmental Protection Agency for *sole source aquifer* designation;
- With the Oregon Department of Transportation to ensure road hazards are minimized;
- With the Union Pacific Railroad to institute precautions;
- With the Oregon Department of Agriculture to address agricultural land and county issues through a locally appointed agricultural or resource lands Citizen Task Force;
- With the Department of Environmental Quality (DEQ) to decommission or clean up sites contaminated by businesses in the past; and
- With Junction City and Coburg to partner with agricultural chemical suppliers, DEQ and Lane County to collect chemical containers and excess agricultural chemicals.

2. Support the City's efforts to be proactive and develop a stormwater management program.

3. There are over 1,500 wells identified in the drinking water protection study area, wells that are no longer in use pose a significant risk to aquifer contamination. It is recommended to identify and decommission these abandoned wells.

4. SUB should consider proximity to major transportation routes and other areas prone to risk as one factor in the evaluation of new well sites.



# **Springfield Drinking Water Protection Plan Addendum (2002)**

**Prepared for**  
City of Springfield  
Planning and Development Department

**Prepared by**  
City of Springfield  
And  
Springfield Utility Board

June 19, 2002

## Abstract

Both groundwater and surface water are critical natural resources for drinking water as well as for industrial and agricultural uses. It is in every community's interest to develop a program that protects these vital resources against contamination.

In 1999, the Oregon Health Department (OHD) determined that some of Springfield's public drinking water wells are under the influence of surface water. To help meet additional requirements, SUB constructed a slow sand filter system within the Willamette Wellfield. This facility is designed to treat both groundwater from affected wells and surface water drawn from the Middle Fork Willamette River. Adding surface water creates source variability and increases the volume of water available to the public drinking water supply.

This *Plan Addendum (2002)* for surface water protection supplements an existing *Springfield Drinking Water Protection Plan* (Plan) that contains the strategy for protecting groundwater used as the primary public drinking water source in Springfield, Oregon, a metropolitan area with a population of approximately 60,000. The management strategies, together with a contingency plan and plan for future water system needs, form the existing *Springfield Drinking Water Protection Plan*.

Wherever applicable, the *Plan Addendum (2002)* extends these principals to the protection of surface water and adds a strong emphasis to the development and cooperation between the city of Springfield, Springfield Utility Board (SUB), and other partners in protecting the surface water component of Springfield's drinking water supply.

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**Appendix A – Springfield Utility Board, *Potential Contaminant Source Inventory (Sanitary Survey)*, 2001**

## Acknowledgements

The *Springfield Drinking Water Protection Plan Addendum (2002)* is based on guidelines provided for public drinking water systems from surface water sources (DEQ-OHS *Oregon Source Water Assessment Plan and Addendum, 1999*) and produced through the combined efforts of local officials and public agency staff. This project was staffed by an inter-agency team from the City of Springfield, Springfield Utility Board, and Oregon Department of Environmental Quality.

The City of Springfield and Springfield Utility Board recognize and appreciate the role of the Oregon DEQ, Springfield City Council and Planning Commission in providing policy direction during the course of this plan addendum development and the contributions of the Technical Advisory Group for providing guidance and technical assistance.

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## **Chapter 1: Introduction**

Springfield's existing *Drinking Water Protection Plan* was adopted by Springfield Utility Board (SUB) and Rainbow Water District (RWD) on May 15, 1999 and by the City of Springfield on May 17, 1999. This *Plan Addendum (2002)* maintains all aspects of the existing *Drinking Water Protection Plan*, extending the boundaries of protection to include surface water of the Middle Fork Willamette River (Middle Fork) Watershed. As required by the Department of Environmental Quality (DEQ)/Oregon Health Department (OHD), *Drinking Water Protection Guidance Document*, the management area for the Middle Fork encompasses a 1,000 foot setback adjacent to the river and its perennial tributaries for a travel distance of eight hours upstream from the Springfield Utility Board's (SUB) Willamette Wellfield.

### **Background**

Springfield Utility Board has historically drawn all of its public water from wells located throughout the city. To help preserve this vital groundwater resource, a *Drinking Water Protection Plan* was adopted by the City of Springfield in May 1999. The existing *Plan* covers an area that extends to the Springfield urban growth boundary and incorporates a set of specific goals established by a Citizen Task Force.

This same year, OHD determined that some of Springfield's public drinking water wells are directly under the influence of surface water. Public drinking water wells under the influence of surface water require treatment for organisms over and above that for groundwater alone.

To help meet this requirement, SUB conducted research and pilot studies to help determine a method of treatment that was both acceptable to regulatory agencies and cost-effective to construct and operate. Based on the results, SUB constructed a slow sand filter system within the Willamette Wellfield. This facility treats groundwater from affected wells and surface water drawn from the Middle Fork. The treatment facility is expected to go on-line in October, 2002.

SUB is also taking advantage of existing water rights on the Middle Fork by supplementing groundwater with surface water drawn from an intake on the river. This surface water source adds to the volume of water available to the public drinking water supply. Both groundwater from the affected wells and surface water from the river are treated by slow sand filtration. Additional treatment for water filtered through the slow sand filter system includes ultra violet (UV) light and chlorination as approved by Oregon Department of Human Resources (ODHR) – Drinking Water Program (formerly OHD).

## **Purpose**

Springfield's existing *Drinking Water Protection Plan* covers only groundwater sources within the Urban Growth Boundary of Springfield. This *Plan Addendum (2002)* extends the goals established by the Citizen Task Force to include surface water protection and expands the protection area to include the entire Middle Fork Watershed as the zone of contribution. However, the surface water management area is limited to a 1,000-foot setback along the Middle Fork and its perennial tributaries for a distance of approximately 28 miles upstream from the intake. This fulfills the requirements of DEQ's Source Water Assessment Guidelines for public drinking water systems supplied from conjunctive and surface water resources.

Drawing surface water from the Middle Fork will supplement existing groundwater resources supplied to the city of Springfield by SUB. This additional volume is especially important during periods of high water use, such as in the summer months.

The surface water protection area is entirely outside the Urban Growth Boundary of Springfield; primarily within the jurisdiction of Lane County and the incorporated city of Lowell. This makes inter-agency cooperative agreements with partner agencies and organizations essential to provide public education, monitoring, and other protection strategies for this surface water resource.

Established and/or potential partners in this effort are Lane County, the city of Lowell, U.S. Army Corp of Engineers, U.S. Forest Service, and others who routinely use or effect water from the Middle Fork. Partnerships with the Oregon DEQ and the Middle Fork Willamette Watershed Council (MFWWC) to protect and restore the watershed have already been established.

## **Area Sketch**

The entire Middle Fork Watershed upstream from SUB's Willamette Wellfield contributes runoff to the Middle Fork. The watershed is approximately 1,364 square miles of land located in Lane County, Oregon. Some 47 square miles of the watershed lie within the surface water protection management area. This management area stretches an estimated eight-hour time-of-travel upstream (~ 28 miles) to approximately the east end of Lookout Point Reservoir (*Travel Rates of Water for Selected Streams in the Willamette River Basin, Oregon* by David Harris, USGS – *Hydrologic Investigations Atlas*, HA273, 1968) and includes a 1,000-foot setback on either side of the Middle Fork and its perennial tributaries.

Incorporated cities within the management area of the Middle Fork Watershed or that are relevant to this *Plan Addendum (2002)*, include Springfield (population 53,700), and Lowell (population 1,105). Rural communities include Pengra, Dexter, Jasper, and Fall Creek (Barry Edmonston, Director, Population Research Center – Portland State University, Press release, *Oregon's Population Increases by More Than One-half Million in the 1990s*, December 13, 2000).



The population of Lane County and Springfield has grown significantly over the last decade. Lane County census figures for the year 2000 indicate a population growth of 12.44 percent (282,912 to 318,100) for the decade between 1990 and 2000. The population of Springfield grew by 20.23 percent (44,664 to 53,700) during this same period (Barry Edmonston, Director, Population Research Center – Portland State University, Press release, *Oregon's Population Increases by More Than One-half Million in the 1990s*, December 13, 2000).

Portions of Highway 58, Jasper-Lowell Highway, West Boundary Road, Pengra Road, Fall Creek Road and several smaller roads are located close to and/or cross the Middle Fork or its perennial tributaries within the management area.

Union Pacific Railroad lines are located within 1,000 feet of the Middle Fork, cross the river at Jasper, and continue south, southeast; crossing Rattlesnake Creek and Lost Creek before swinging east, parallel to the south shore of Dexter and Lookout Point Reservoirs.

### **Natural Environment**

The Middle Fork Watershed is located primarily in the eastern portion of Lane County, Oregon. Boundaries of the area of contribution are the Cascade Mountains to the east, McKenzie Watershed to the north, Coast Fork Willamette River Watershed to the south and the mainstem Willamette River to the west.

### ***Climate***

The Middle Fork Watershed experiences wet winters and dry summers. Precipitation generally increases with elevation, ranging from an average of 40 to 50 inches per year on the valley floor to 80 inches at the headwaters of Little Fall Creek (University of Oregon Department of Geography, *Atlas of Lane County*, 1999).

### ***Surface Water Drainage***

The Middle Fork has its source in the Cascade Mountains and flows northwest down a steep gradient to the Willamette Valley. Both rainwater and snowmelt contribute to surface water supplies. The Cascades store water in the form of snow that is released during the summer. This snowmelt helps keep the flow relatively consistent in the Middle Fork (~2,000cfs – year round) and Fall Creek (800 – 3,000 cfs – rainy season) (University of Oregon - Department of Geography, *Atlas of Lane County*, 1999).

Perennial tributaries within the eight-hour time of travel to the Willamette Wellfield include Pudding Creek, Lost Creek, Alder Creek, and Rattlesnake Creek that enter the Middle Fork from the south. Wallace Creek, Hills Creek, Fall Creek, and an unnamed creek enter the Middle Fork from the north. Little Fall Creek joins Fall Creek below Fall Creek Dam. Winberry Creek discharges to Fall Creek Reservoir and Goodman Creek, Schweitzer Creek, Minnow Creek, and Duval Creek discharge to Lookout Point

Reservoir. Several unidentified smaller creeks depicted on USGS topographical maps also discharge to the Middle Fork and the reservoirs within the eight-hour time-of-travel.

Springfield Mill Race is a man-made diversion channel from the Middle Fork that historically provided access to mill ponds on the south side of Springfield. It is currently used to discharge storm water from south Springfield. Gory Creek connects to the Mill Race and flows through the Willamette Wellfield providing recharge to the aquifer. These water-bodies are not perennial streams and no surface water setback has been identified for them. However, portions of the Mill Race and Gory Creek do fall within the delineated wellhead protection area as defined within the existing *Springfield Drinking Water Protection Plan*.

Dams/reservoirs within the eight-hour time-of-travel upstream from SUB's intake at the Willamette Wellfield which contribute flows to the Middle Fork are Dexter Reservoir and Lookout Point Reservoir on the Middle Fork and Fall Creek Reservoir on Fall Creek.

Waldo Lake, Fall Creek Reservoir and Dam, and several additional creeks, contribute to the flow of the Middle Fork, but are outside the designated surface water management area.

Average Annual Flow (cfs)	Average Summer Flow (cfs)	Average Winter Flow (cfs)
4154	2318	6433

**Table 1. Average annual, summer, and winter flows in cubic feet per second (cfs) for the Middle Fork at Jasper (U.S. Geological Survey, 2000)**

### *Hydrogeology*

Soils in the Cascades are primarily of volcanic origin. Most are moderately deep, well-drained loams and clay loams derived from igneous and sedimentary rock. Soils in the lowlands of the Willamette Valley are a mixture of alluvium, or materials deposited by rivers and their tributaries. Alluvium materials include sands, gravels, and silts transported from the Cascade Mountains. Depending on their composition, soils in bottomlands and terraces range from excessively drained gravelly sandy loam to poorly drained silty clay loam and silty clay (Patching, R. 1987, *Soil Survey of Lane County, Oregon*, USDA Soil Conservation Service, Washington, D.C.).

Groundwater is most plentiful in areas with alluvial deposits and porous lava materials. Alluvial deposits from the mouth of the Middle Fork upstream to Dexter Dam store large quantities of groundwater.

SUB currently has 32 wells located throughout the city of Springfield. Prior to adding a surface water source, these wells provided 100 percent of the public drinking water supply for the city from the Springfield aquifer. SUB will continue to use groundwater as the primary drinking water resource. However, it is anticipated that the Middle Fork will contribute about 10% of the total water consumed.

### *Sensitive Areas*

Sensitive areas within the watershed include locations with a high potential to impact the streams primarily due to their proximity or vulnerability. Evaluations for high soil erosion potential, high permeability soils, and high runoff potential within these areas are based on information listed in the U.S. Department of Agriculture, *Soil Survey of Lane County, Oregon*, 1987. They can also be calculated using the 1:24,000 SSURGO (Soil Survey Geographic Database) data sets from the *Natural Resources Conservation Service*.

### Setbacks

A setback of 1,000 feet distance from the centerline of the intake stream and all perennial tributaries has been suggested by the DEQ to identify those areas where there are higher risks of contamination from spills and other releases due to their proximity to streams.

### Soil Erosion Potential

High soil erosion potential is based on the effects of slope and soil erodibility (K-factor). Soils classified as high are on >30% slopes and have K-factors >0.25. Though small areas of soil meeting these parameters were noted throughout the management area, they are more often found in the upper regions of the watershed.

### High Permeability Soils

Areas within the management area identified as having high permeability soils are of Recent Alluvial Deposits and have a high potential for groundwater recharge adjacent to streams. These soils are more often found on the valley floor.

### High Runoff Potential

Areas with a high runoff potential are typically clays, with high water tables, or where an impervious layer occurs at a shallow depth. These Class D soils have very slow infiltration rates and are often found in wetland areas.

## **Chapter 2: Participation**

Public participation in the development of the *Springfield Drinking Water Protection Plan* (plan), included the Springfield Drinking Water Protection Citizen Task Force (Citizen Task Force), materials and notices sent to the Interested Parties Mailing List, Planning Commission meetings, and City Council meetings. Public participation in development of activities and policies for the Middle Fork Watershed will be based on agency/organization specific processes as determined by public process. These will include Lane County, ODA, and DEQ information meetings and public hearings and MFWWC meetings.

### **Representation of Interests**

The area that contributes surface water to Springfield's drinking water supply is entirely outside the political boundaries of Springfield. The following interests were either represented by the MFWWC or were kept informed and participated in the study through other public involvement or actions.

Industries;  
Commercial interests;  
County residents;  
Farmers;  
Lane County agency staff;  
State agency staff;  
Federal agency staff;  
Middle Fork Willamette Watershed Council.

### **Community Involvement**

The MFWWC is the primary vehicle for community involvement in development of outreach and education of residents within the management area. The MFWWC represents diverse interests related to conservation, preservation, and protection of the Middle Fork (see Acknowledgements). All meetings of the MFWWC are advertised and open to the public. Meeting agendas are mailed to persons listed as Interested Parties and many citizens attend these meetings. In addition, MFWWC-Outreach and Education Committee strives to provide opportunities for informing residents, and commercial interests about uses and strategies for improvements and protection of surface and groundwater within the management area.

As part of a basin-wide project, the MFWWC prepared a Watershed Assessment for the lower Middle Fork. This assessment was compiled by an outside consultant and based on water sampling conducted specifically for this project. It also incorporates data for other physical parameters conducted by outside sources. A recommended action that came from the assessment was to collect baseline data for a variety of physical parameters. A Sampling Plan for designated sites in the lower watershed has been prepared to gather information on bacteria, pH, conductivity, and other parameters. This information will be

used in determining source water protection strategies and contingencies for the Middle Fork Willamette Watershed and this *Plan Addendum (2002)*.

The assessment will also add to information being collected by the DEQ for use in determining Total Maximum Daily Loads (TMDLs) for the Middle Fork. TMDLs identify the maximum amount (load) of each pollutant the river can absorb per day and still meet state water quality standards.

### **Chapter 3: Delineation of Surface Water Component - Drinking Water Protection Areas**

DEQ requires a *Drinking Water Protection Plan* to be developed and drinking water protection areas to be delineated for surface water sources used as a public drinking water supply. Setbacks of approximately 1,000 feet (or greater) from the center of the river and its perennial tributaries for a distance equivalent to eight hours upstream from the intake have been suggested for this purpose.

For surface water sources, the drinking water protection (management) area delineation process began by identifying the watershed boundaries of the Middle Fork. The surface water delineation for the zone of contribution includes the entire watershed area upstream of the SUB's public water system intake on the Middle Fork. This base delineation was provided to the City of Springfield by DEQ.

To narrow the management area covered by the surface water component of *Springfield's Drinking Water Protection Plan Addendum (2002)*, it was first determined how far upstream to include in the setback. The intake at the Willamette Wellfield that supplies surface water to the slow sand filter system is located at approximately the river mile 189 marker on the Middle Fork. Based on the average high flow rate of 7,000 cubic feet per second provided by the U.S. Geological Survey (USGS), water in the Middle Fork travels 3.5 miles per hour over this reach. This places the maximum estimated eight-hour time of travel upstream from the intake at about river mile 217 (~28 miles), or approximately the east end of Lookout Point Reservoir (*Travel Rates of Water for Selected Streams in the Willamette River Basin, Oregon* by David Harris, USGS – *Hydrologic Investigations Atlas*, HA273, 1968) (see maps, Appendix A).

Perennial tributaries were determined from USGS Topographic Maps for the area and the 1,000-foot setback was placed on the Middle Fork Watershed map by the City of Springfield as a Geographic Information System (GIS) layer. Other GIS layers included sensitive soils, transportation systems (railroads, highways, roads), land use zoning, and other potential sources of contamination.

#### **Local Surface Water Characteristics**

Both rainwater and snowmelt contribute to surface water supplies. The Cascade Mountains store water in the form of snow that is released as melt-water during the summer.

Water stored in reservoirs behind dams located on the Middle Fork and Fall Creek help regulate flow rates in the river. Perennial tributaries contribute flow to the river year round.

Surface water in the Middle Fork leaves the drinking water protection area at the downstream boundary of the Willamette Wellfield and is joined by the Coast Fork approximately one mile west of the wellfield to form the mainstem Willamette River.

## Surface Water Uses

Consumptive uses of water in the watershed include irrigation, agriculture, industrial, and municipal use. Irrigation is the primary consumptive use for which water rights are issued. Non-consumptive uses include fish and wildlife habitat, recreation, and power generation. Table 2 Summarizes water allocations at the mouth of the Middle Fork. These figures represent water allocated for use, not actual use.

Allocated Consumptive Water Use	Middle Fork Willamette River	
	Cubic feet/second	Acre feet
Irrigation	26.67	1,505
Domestic	15.72	952
Agriculture (other)	3.48	210
Industrial/Manufacturing	35.04	2,104
Municipal	243	14,660
Totals	323.9	19,431

Table 2. Annual allocations for consumptive water use in the Middle Fork Willamette River (Oregon Water Resources Department, 2002)

## Dams/Reservoirs

Dams provide power generation and flood control in winter, and flow-augmentation in summer. Water stored in reservoirs behind dams influences seasonal water availability and flow patterns in the Middle Fork.

Reservoirs that contribute flows are Dexter Reservoir and Lookout Point Reservoir on the Middle Fork and Fall Creek Reservoir on Fall Creek. Table 3 summarizes the uses of each dam and reservoir. Hills Creek Reservoir and Dam are located upstream from and outside the designated management area.

Dam/Reservoir	Water Uses	Storage Capacity (Acre-ft)	Summer Draw Down Priority	Annual Visitors (average)
Lookout Point	Flood control Hydroelectric 3 Gen. Recreation	Full 455,800 Summer 324,200	1st	97,000
Dexter	Flood control Hydroelectric 1 Gen. Recreation	N/A	N/A	321,000
Fall Creek	Recreation	Full 125,000 Summer 108,200	5th	269,000

Table 3. Dam & Reservoir Uses (USACE and OWRD, *The Willamette Basin Reservoir Study*, 1999)

### ***Forestry and Agriculture***

The predominant land use in the upper reaches of the Middle Fork is forestry. Most forestlands are in the Cascade Mountains and extend down the eastern side of the Willamette Valley. The U.S. Forest Service, Bureau of Land Management (BLM), and private owners are major forest landholders. Forest Service lands start approximately 3 miles east of Lookout Point Dam (Wayne Honneycut – Forest Technologist – U.S. Forest Service). The BLM has no holdings within the 1,000-foot setback for the stretch of the Middle Fork between the intake at the Willamette Wellfield and the east end of Lookout Point Reservoir (David Mattson, Engineer – McKenzie Resource Area, BLM).

Most agriculture in the Middle Fork Watershed is located in the Willamette Valley. There is very little land in agricultural use above Dexter Reservoir. The dominant agricultural land use is pasture and hayland. Some row-crops are found near Jasper, Lowell, and Pleasant Hill. There are also some nurseries, Christmas tree farms and orchards in that area (Ross Penhallegon, OSU – Lane County Extension Service).

### ***Livestock***

Small numbers of livestock grazing, cow/calf operations, riding/boarding stables, and rural residential development with livestock for private use are found within the 1,000-foot setback of the Middle Fork. No dairy farms are located within these sensitive areas (Ross Penhallegon - OSU – Lane County Extension Service).

### ***Wildlife/ Hatcheries***

Wildlife in and adjacent to the Middle Fork includes steelhead, bull trout, and salmon in the river. Western pond turtle, deer, small game and both migratory and resident birds use the riparian areas as habitat and gather food in or adjacent to the river.

Dexter Dam Fish Hatchery is part of the Willamette Hatchery Project that raises Chinook salmon and summer steelhead. This hatchery is located on the north shore of Dexter Reservoir. Adult fish are caught at Dexter Dam and transported via tanker truck to the Willamette Hatchery at Oakridge where eggs are incubated and raised to fingerling size, then transported back to Dexter Dam Hatchery for release to the Middle Fork (Tim Wright, Dexter Hatchery, Oregon Department of Fish & Wildlife).

### ***Recreation***

Recreation in the Middle Fork area relates closely to the scenic landscape. Lane County and Oregon State parks located at or near Dexter, Fall Creek, and Lookout Point Reservoirs provide recreational opportunities in the summer months. Camping, hiking, fishing, hunting, and boating draw over 685,000 visitors to the area every year (*Willamette Basin Reservoir Summaries*, Oregon Water Resources). Boat ramps are located on the shore of Fall Creek, Dexter, and Lookout Point Reservoirs. Boat ramps are also located along the main stream of the Middle Fork at Jasper, Clearwater, and at Pengra Access opposite the mouth of Lost Creek (*USGS 1:24,000 Topographic Maps*).



## **Delineation Projects**

Between 1992 and 1999 delineations of groundwater flow based on time-of-travel, were developed in association with SUB's groundwater wells located throughout the City of Springfield. GIS mapping of the groundwater delineations and potential contaminant sources was completed by the City of Springfield in 1999.

Under the Administrative Rules that apply to *Oregon's Source Water Assessment Plan (Oregon's Drinking Water Protection Program)*, the Oregon Department of Human Services (ODHS - formerly the OHD) has responsibility for certifying groundwater-derived drinking water protection areas in the state (DEQ and OHD, *Source Water Assessment Plan*). The delineations for all of Springfield's wells met state requirements and were certified by OHD in April 1997. Future and new well delineations were certified in March 1999 (Certification #0002R).

Because ODHS has determined that groundwater drawn from the Willamette Wellfield is under the influence of surface water (conjunctive system), additional treatment is required for use as public drinking water. As part of the requirement in constructing a treatment plant, a sanitary survey (potential pollution source inventory) was conducted in 2000 to help identify any significant risks to the Middle Fork. Guidelines provided by *Oregon's Source Water Assessment Plan - Addendum*, June 1999, were used in performing this survey.

In January, 2001, delineation of the Middle Fork Watershed was calculated by DEQ and provided to the City of Springfield as a base map and zone of contribution to the Middle Fork upstream of SUB's surface water intake. Mapping of the 1,000-foot setback from the Middle Fork and its perennial tributaries within an eight-hour time-of-travel, and a base inventory of potential contaminant sources was plotted on a GIS layer by the City of Springfield in May 2001. Information gathered for this GIS layer was compiled by DEQ and SUB.

A Sanitary Survey (Risk Assessment), including a table of potential pollution sources and a map of the watershed was submitted to the ODHS in June, 2001 as part of a construction permit application package for the slow-sand filter system.

DEQ has responsibility for reviewing surface water-derived drinking water protection areas in the State. DEQ has reviewed the delineations and risk assessment for the Middle Fork management area and found them to be both adequate and complete. However, no formal approval or certification is available for drinking water systems installed after June 1999 that use surface water as a resource.

## **Delineation Process**

The area of contribution to the Middle Fork Willamette River encompasses the entire Middle Fork Willamette Watershed. The following activities were performed to complete the delineations and risk assessment (Sanitary Survey):

- Preparation of Middle Fork Willamette Watershed map.
- Calculation of surface water travel time of eight hours upstream from SUB's surface water intake on the Middle Fork was determined from USGS calculations based on the average annual high water flow rate at Jasper.
- Sanitary Survey (inventory) of potential contaminant sources within the drinking water protection management area of the Middle Fork Watershed based on recommendations within *Oregon's Source Water Assessment Plan - Addendum*, June 1999.
- Preparation of a map showing the drinking water protection (management) area within the Middle Fork Watershed and potential sources of contamination within the delineated management area.

The resulting management area provided affected agencies and organizations with defined areas in which to focus management strategies to protect surface water. To further the analysis of potential contamination risks to surface water, the next step was to map land use and develop a potential contaminant source inventory within the drinking water protection management area. This process and the results are presented in the following chapter. The *Sanitary Survey* also forms the base for the *DWPP Addendum (2002)*.

## Chapter 4: Surface Water Component of Drinking Water Protection Area Inventory

The primary intent of the Sanitary Survey (inventory) was to identify and locate significant potential sources of contamination (contaminants of concern) within the drinking water protection (management) area of the Middle Fork Willamette Watershed. Significant potential source of contamination can be defined as:

*Any facility or activity that stores, uses, or produces contaminants of concern and has sufficient likelihood of releasing such contaminants to the environment at levels that could contribute significantly to the concentration of these contaminants in the source waters of the public water supply (Oregon DEQ, Source Water Assessment Plan, Draft, November 17, 1998).*

Contaminants can reach a water body (groundwater, rivers, lakes, etc.) from activities occurring on the land surface or below it. Potential sources of surface water contaminants from Oregon's *Short List of PCSs for Surface Water Component of GWUDI Systems* (DEQ Drinking Water Protection Potential Contaminant Sources and DEQ Codes – Rev. 3/1/01) provides a useful overview of potential sources of contamination. The *List* was used as a guideline for understanding the types of chemicals likely found at different facilities and the level of contamination risk these facilities pose for surface water.

The inventory was conducted by SUB with assistance from Oregon DEQ, between March and June 2001.

The completed inventory served several important purposes:

- Provided an effective base for informing/educating the MFWWC, staff, and the public about potential risks;
- Provided information on the locations of many potential contaminant sources, especially those that present the greatest risks to surface water;
- Provided information on the extent and volume of hazardous chemical use within the Middle Fork management area; and
- Provided a reliable basis for developing management strategies to reduce the risks to surface water that contribute to Springfield's drinking water supply.

Based on EPA national guidance, DEQ recommends an inventory for surface water sources be completed within an area that includes a minimum setback of 1,000 feet or greater from the center of streams. Springfield's inventory of potential surface water contaminant sources was carried out within a setback of 1,000 feet from the edge of streams and reservoirs to identify those areas where there are higher risks of

contamination from spills or other releases, simply due to their proximity to the water body.

The stream boundaries for the potential pollution source inventory were essentially from river mile 189 located at the Willamette Wellfield to the east end of Lookout Point Reservoir (approximately 28 miles) on the Middle Fork and an equivalent distance upstream for perennial tributaries.

This basic inventory was used to direct the focus of management strategies to address risks posed by hazardous chemicals and biologic contaminants across all land use zones within the drinking water protection management areas that lie outside the Urban Growth Boundary of Springfield.

### **Methodology**

Past, current, and future hazardous chemical uses were identified through a variety of methods. The inventory process did not include an inspection of sites for individual potential contamination sources or chemical inventories. Inspection of all sites within the drinking water protection management area for chemical inventory and storage is recommended. However, it was determined that the inventory goal could be accomplished by other means such as using the State Fire Marshal's inventory of hazardous materials submitted by businesses and the DEQ and EPA source lists. Using the *Short List of PCSs for Surface Water Component of GWUDI Systems* as provided in the DEQ Drinking Water Protection Potential Contaminant Sources and DEQ Codes, Rev. 3/1/01) and *Table 5-2: Potential Sources of Drinking Water Contaminants*, assumptions were made about typical chemicals associated with different land uses and the risks these types and volumes of chemicals pose to surface water.

The inventory was completed in several phases. The first phase was a limited inventory of potential contaminant sources listed in databases maintained by the state. The second phase consisted of visual observations of properties made by driving the drinking water protection management area adjacent to the Middle Fork. The third phase was contacting local, state, and federal agencies and asking them to provide information on facilities within their jurisdiction for these same areas. The process for completing the inventory is summarized as follows:

- DEQ developed a digital base map for the entire Middle Fork Watershed;
- City of Springfield delineated the drinking water protection management areas (1,000-foot setback within the eight-hour time-of-travel along the Middle Fork and its perennial tributaries upstream from the intake) as an overlay on the base map;
- SUB completed an inventory of potential contaminant sources within the drinking water protection management area of the Middle Fork Watershed;

- SUB developed a list of registered water wells within or close to the drinking water protection areas; and
- City of Springfield plotted information from local, state, and federal agency databases that represented potentially significant sources of contamination to the surface water component of Springfield's drinking water supply source. Plotted data includes:

#### DEQ

1. Underground storage tanks (UST)
2. Leaking underground storage tanks (LUST)
3. Underground Injection Control (UIC)
4. Registered hazardous waste generators (HWIMSY)
5. Environmental clean-up site inventory (ECSI)
6. Solid waste facilities

#### State Fire Marshal

7. Hazardous materials handlers
8. Hazardous materials incidents

#### EPA

9. Superfund sites
10. Toxic release locations
11. Waste water discharging facilities - Source Information System (SIS)

No Concentrated Animal Feeding Operations (CAFOs) were reported on state lists or noted by the OSU – Lane County Extension Agent for the management area.

### **Results**

Results of the inventory and mapping are shown on the map series attached at the end of this document. The GIS base map can be displayed at any scale and will be updated bi-annually to reflect any changes in the status of potential contaminant sources inventoried. The mapped drinking water delineations will be shared through Lane County Council of Governments' (LCOG) common mapping system, the City of Springfield for this *Plan Addendum 2002*, University of Oregon Info-Graphics Library, and others.

In addition to being used by the City of Springfield for this *Plan Addendum (2002)*, the map will be made available for public education projects and informational purposes. It may also be used by consultants working for private industry in developing their business plans and by the Oregon ODA, DEQ, Army Corps of Engineers, Oregon Fish and Wildlife, Lane County and Oregon State Parks Divisions, and the MFWWC in performing projects designed to protect surface water for all beneficial uses.

The total inventory covered an area of approximately forty-seven (47) square miles inside the zone of contribution (ZOC) of 1,364 square miles that comprises the entire Middle

Fork Willamette River Watershed. This is a substantial area that has numerous and complex issues.

Table 4 displays an inventory of tax lots inside the surface water component of the drinking water protection management area (map, tax lot inventory within the 1,000-foot setback, Lane County of Government (LCOG)). There are 3,668 tax lots within this area with 49 of the lots zoned commercial/industrial.

Zoning class	# Tax lots	% Total tax lots	Acres	% Total acres.	Total sq. miles
Residential lands	1,171	31.92	2,531.22	8.42	3.96
Parks/Public lands	53	1.44	763.82	2.54	1.19
Forest lands	912	24.86	22,866.17	76.06	35.73
Agriculture	267	7.28	3,046.05	10.13	4.76
Commercial lands	24	0.65	19.95	0.07	0.03
Industrial lands	25	0.68	111.79	0.37	0.17
Mining/Sand & Gravel	21	0.57	568.53	1.89	0.89
Water	1195	32.58	155.41	0.52	0.24
<b>Totals</b>	<b>3,668</b>	<b>99.98%</b>	<b>30,062.94</b>	<b>100%</b>	<b>46.97</b>

**Table 4. Land use within the drinking water protection management area for surface water**

## **Chapter 5: Management of Potential Sources of Contamination**

In this chapter, potential sources of contamination are addressed by goals and related management strategies. Goals are broad vision statements that describe desired conditions or activities in the future and provide direction for the development of management strategies. The management strategies for each goal more specifically describe a course of action.

Goals for protection of groundwater were developed by the Citizen Task Force (Citizen Task Force). These are found in the existing *Springfield Drinking Water Protection Plan* adopted by the City of Springfield on May 15, 1999 and are listed below in order of priority. The Citizen Task Force prioritized these goals without information on their relative costs and benefits. It is important to emphasize the first two goals (Public Education and Overlay Zone) received a score in the prioritization significantly higher than the remaining recommendations.

Where applicable, these goals carry over to the *Plan Addendum (2002)* developed for the protection of surface water that contributes to the City of Springfield's drinking water supply.

1. Implement a Public Education Program
2. Adopt a Drinking Water Protection Overlay Zone
3. Develop and Implement a Surface Water Monitoring Program
4. Enhance the Existing Hazardous Waste Collection Program
5. Develop and Implement a Septic System Upgrade/Maintenance Program
6. Use and Enhance Existing Spill Response Plan
7. Form Public-Private Partnerships
8. Implement a Water Conservation Program
9. Use Property Purchase and Donation to Provide Protection Areas

During the prioritization process, the Citizen Task Force offered the following additional recommendations for which there was general consensus of support, although they were not ranked with the others as separate alternatives. These additional recommendations are discussed at the end of this chapter.

- Intergovernmental coordination
- Storm water management
- Abandoned wells

### **Goals and Related Management Strategies for Surface Water Component of Drinking Water Protection Plan**

#### ***Goal 1: Implement A Public Education Program.***

The Citizen Task Force's highest priority was to develop and implement a public education program that would include the following four components, in order of priority.

1. Comprehensive public education program
2. Notification
3. Technical assistance
4. Signs

These programs as adopted by the DWP Plan are expanded to include surface water aspects of drinking water protection. Springfield and SUB will work closely with drinking water protection partners (Lane County, Army Corps of Engineers, ODA, DEQ, City of Lowell, MFWWC, and others) in coordinating public education efforts within the surface water protection management areas of the Middle Fork. SUB will work with the MFWWC in sending a message to new and existing businesses and property owners about which activities pose a risk to surface water resources.

***Goal 2: Adopt a Drinking Water Protection Overlay Zone.***

The Citizen Task Force's other highest priority was for the City of Springfield to adopt a *Drinking Water Protection Overlay District* for the combined zone of contribution and to refer the overlay district to the City of Eugene and Lane County for adoption and application to areas that are within their jurisdictions.

The Citizen Task Force generally agreed that the overlay district would contain the following five components, in order of priority.

1. Prohibitions
2. Standards
3. Inspections
4. Monitoring
5. Transport

An overlay district that covers the delineated areas inside the Springfield City limits and urban growth boundary (UGB) was included as part of the City of Springfield Land Use Development Code, Article 17, adopted by the Springfield City Council on May 17, 2000.

This *Drinking Water Protection Plan Addendum (2002)* covers surface water protection areas that lie entirely outside political boundaries of the City of Springfield. Therefore, the City has no jurisdiction over these areas. Instead, the City will work with Lane County and other agencies to recognize the entire Middle Fork Watershed as the zone of contribution to the surface water component of Springfield's drinking water resource.

The City of Springfield will refer the extended zone of contribution and management area to state and federal agencies, Lane County, and incorporated cities in the watershed for adoption of measures to protect those portions of the management area that lie within their jurisdictions.



The City of Springfield and SUB will encourage and support the prohibition of high-risk (DNAPL) chemical uses within the surface water management areas upstream of the Willamette Wellfield drinking water supply intake on the Middle Fork. SUB and the City will also support and encourage proper storage and containment of hazardous chemicals that pose a risk of contamination to the drinking water supply.

***Goal 3: Develop and Implement a Surface Water Monitoring Program.***

The Citizen Task Force recommended a monitoring program that includes all drinking water protection area delineations inside the Drinking Water Protection Overlay District and possibly individual potential sources of contamination. The monitoring program includes the following three components, in order of priority.

1. Establish a comprehensive monitoring program
2. Sample during investigation
3. Sample during clean up

The *Plan Addendum (2002)* will extend this goal to include the Middle Fork Watershed management area.

1. Establish a comprehensive monitoring program.

The MFWWC has developed a water quality monitoring program for temperature, pH, turbidity, conductivity, and other parameters as a component of the *Source Water Assessment* required under federal regulation of all watersheds that contribute to a public drinking water supply (Oregon DEQ, *Sub-Basin Target Dates for Completion of TMDL's for Waters Listed in the 1998 303(d)List*). This assessment is scheduled for completion by 2003 and will establish base conditions for the Middle Fork and its tributaries.

Future monitoring will primarily be performed by DEQ and MFWWC with assistance from trained volunteers. In addition, SUB will conduct water quality testing at the point of intake and assist the MFWWC in their monitoring efforts within the surface water management areas. The frequency of testing will be determined based on evaluation of the Middle Fork Watershed Assessment.

2. Sample chemicals of concern during site investigation.
  - Require that samples for chemicals of concern be collected during site investigation. Whenever samples are collected during a site investigation or cleanup and follow-up monitoring, results of this sampling must be provided at no additional cost to the Drinking Water Protection Program or appropriate agency/organization.
3. Sample during cleanup.

- Require businesses conducting cleanup activities to provide sample results of all analysis to the monitoring program at no additional cost to the program or appropriate agency/organization.

***Goal 4: Enhance the Existing Waste Collection Program***

The Citizen Task Force recommended the following four enhancements to Lane County's hazardous waste collection program, in order of priority:

1. Increase frequency and flexibility
2. Demand management
3. Evaluation
4. Increase program funding

Lane County's hazardous waste program extends to all areas of the Middle Fork Watershed. Therefore, no changes or additions to Goal 4 are needed or recommended within this *Plan Addendum (2002)* for protection of surface water. It is recommended that this goal continue to be supported.

***Goal 5: Develop and implement a septic system upgrades/maintenance program.***

The Citizen Task Force forwarded the following two recommendations in this category, in order of priority.

1. Inspections and maintenance requirements
2. Septic tank regulations

No changes or additions to Goal 5 are recommended within this *Plan Addendum (2002)* for protection of surface water.

***Goal 6: Use and enhance existing spill response plan***

The Citizen Task Force supported the following aspects of spill response, in order of priority:

1. Existing plan
2. Spill diversion and containment
3. Mapping
4. Hot line

Lane County's spill response program extends to all areas of the Middle Fork Watershed. Therefore, no changes or additions to Goal 6 are recommended within this *Plan Addendum (2002)* for protection of surface water.

***Goal 7: Form Public-Private Partnerships***

The Citizen Task Force forwarded the following three recommendations, in order of priority:

1. Public Education by private sector
2. Public-coordinated partnerships
3. Business recognition program

Public-private partnerships are especially important within the Middle Fork management areas that are most vulnerable to potential pollution.

Public partners will be encouraged to provide information and education for the purpose of raising public awareness to the risk of surface water pollution from everyday activities and provide education on ways to reduce that risk.

***Goal 8: Implement a water conservation program***

The Citizen Task Force forwarded the following recommendations, in order of priority:

1. Water demand management
2. Rate structure changes
3. Piping loss reductions
4. Rebate program

Recommendations of the Springfield Citizen Task Force on water demand management are extended to include water drawn from the Middle Fork Willamette River.

***Goal 9: Use property purchase/donation to provide protection areas***

The Citizen Task Force forwarded the following recommendations, in order of priority:

1. New wells
2. Land-set asides
3. Conservation easements
4. Voluntary deed restrictions

The recommendation for item 1 (new wells) is not applicable to surface water. Recommendations adopted by the Plan are extended by this *Plan Addendum (2002)* for items 2, 3, and 4 are to include the surface water management area of the Middle Fork.

***Goal 10: Consider additional recommendations***

The Citizen Task Force forwarded the following recommendations regarding:

1. Intergovernmental coordination,

2. Storm water management,
3. Abandoned wells, and
4. Evaluation of new well sites.

The Citizen Task Force considered these recommendations to be very important, although they were not included as separate options in the initial list of alternatives to be prioritized.

The basis of a network of public partnerships to prevent contaminants entering the Middle Fork has been established. Surface water protection will greatly depend on coordinated efforts between these intergovernmental partnerships formed by SUB, Lane County, Army Corp of Engineers, Cities of Springfield, and Lowell, and others.

Recommendations adopted by the Plan are extended by this *Plan Addendum (2002)* to include the surface water management area of the Middle Fork with the addition of the following for #3, Abandoned Wells:

- There are over 1,500 wells identified in the existing drinking water protection study area. Additional wells are located within the surface water management area of the Middle Fork. Wells that are no longer in use pose a significant risk to aquifer contamination. It is recommended to identify and decommission these abandoned wells.

## Chapter 6: Contingency Plan

Goals and management strategies presented in the previous chapter focus on proactive efforts that are intended to protect the drinking water supply from contamination. In the event a drinking water contamination problem should occur, Springfield also needs to be prepared to react to the contamination with a contingency plan. A contingency plan is designed response to the contamination or disruption of Springfield's current water supply. The contingency plan focuses on:

- Identification of the primary potential threats to the water supply; and
- Developing procedures that will be followed should threats materialize.

*Springfield's Contingency Plan* addresses ten elements required by the Oregon Source Water Protection Program, including:

1. Potential threats to the drinking water supply;
2. Protocols for incident response;
3. Prioritization of water usage;
4. Key personnel and development of a notification roster;
5. Short-term and long-term replacement of water supplies;
6. Short-term and long-term conservation measures;
7. Plan testing, review, and update;
8. Personnel training;
9. Provisions for public education; and
10. Logistical and financial resources

Additional details for emergency response situations can be found in *Springfield Utility Board's (SUB) 1998 Integrated Contingency Plan*, which describes SUB's emergency organization and provides for clear authority, direction, and communication during emergencies. Additions to the *Contingency Plan* apply only to the surface water component of the drinking water supply.

### 1. Potential threats to the drinking water supply

Due to the complexity of the SUB and Rainbow Water District's water supply system, potential threats are dependent on the location of the problem. The community water system is currently supplied by 33 wells in seven wellfields located the area as shown in Map #1. The supply system is divided into separate pressure and operational areas. They are:

**SUB/Rainbow North System** is primarily located north of I-105 and east of I-5 and served by the Rainbow I-5, SUB Sports Way, Rainbow "Q" Street, Rainbow Chase wellfields, and SUB/Rainbow jointly owned WEYCO wellfield. Water pressure ranges between 80 and 105 pounds per square inch (PSI).

**SUB West System** is bounded by I-105 on the north, the city limits on the west and south, and 28<sup>th</sup> Street on the east. It is served by water from the Willamette

Wellfield plus water through inter-ties from SUB/Rainbow North System and SUB East System. Water pressure in this system is maintained at 50 to 55 PSI, which is substantially lower than the other systems and only allows for bringing water into the system.

**SUB East System** is essentially east of 28<sup>th</sup> Street and bounded by the city limits on the north, south, and east. Water for the East System comes from the Thrust and SP/Mia Wellfields in addition to the SUB/Rainbow jointly owned EYCO Wellfield. Water pressure ranges between 70 and 90 PSI.

The Thurston, WEYCO, Chase, and Willamette Wellfields are located near the McKenzie or Middle Fork Willamette Rivers and have the potential to be impacted by flooding and spills in the rivers.

The I-5, Sports Way, "Q" Street, and SP/Maia Wellfields are less subject to flooding. They are closer to commercial/industrial areas and are next to the I-5 and I-105 highways, which major transportation corridors.

Primary threats to Springfield's drinking water system are related to an interruption of water delivery or contamination of the aquifer used for the drinking water supply. Nine types of events have been identified that could cause an interruption in delivery and/or contamination of the water supply.

- A. Electrical/mechanical problems: power outage, broken pipeline, pump failure
- B. Flooding
- C. Detection of contamination at a wellhead
- D. Contamination from a leaking underground storage tank or chemical spill at a nearby business
- E. Railroad or highway spills
- F. Spill in the McKenzie River, Willamette River, Springfield Millrace or the storm waste systems that discharge to the rivers or millrace
- G. Storm water contamination resulting in well water contamination
- H. Sabotage
- I. Earthquake and volcanic activities

The most likely threats to the drinking water supply are electrical/mechanical failure; detection of contamination at or near a wellhead; a chemical release within the drinking water protection area; railroad or highway spills; a spill in the McKenzie River, Willamette River, or the Springfield millrace; and the storm water systems that discharge to the rivers and millrace. Procedures to deal with these threats are outlined in Element 2 below.

Surface water contamination issues are divided into two areas of concern:

- Hazardous materials spills that are short term duration and are transported past the drinking water intake over the course of a few hours or a few days. An example would be a tanker truck spill.
- Contaminants that are persistent and are found on the river during most of the year. These contaminants may vary by current rate but are constantly present and need to be removed in order for the water to meet drinking water standards. An example would be turbidity that is a result of a mudslide in the watershed, runoff from roads, or construction activities.

There are many potential causes for water quality problems identified in the Middle Fork watershed. These include discharges from waste water treatment plants, legal and illegal waste dump sites, runoff from forest, agricultural, and private lands, failing septic systems, seasonal flow reductions, recreation, hatcheries, transportation of hazardous materials, management of transportation and utility corridors, and historic activities such as mining and removal or degradation of riparian vegetation.

Erosion from riparian areas (stream banks), rerouting of runoff via road building, construction, and land surfacing such as parking areas can lead to excessive erosion or pollutant transport. Increased heat input due to removal of vegetation, reduction in flow (seasonal), changes in channel shape, and floodplain alteration are also potential sources of water quality impairment. Due to the vastness of the surface water supply area, risk to the drinking water from potential threats is dependent on the location of the problem.

Of the nine types of events listed in the existing *Drinking Water Protection Plan* nearly all are applicable to surface water. The intake for surface water from the Middle Fork is located in the Willamette Wellfield.

## **2. Protocols for incident response**

This element details the appropriate response for the most likely potential threats above.

### **A. B. Electrical/Mechanical and Flooding Related Interruptions.**

Springfield primarily relies on a redundancy of groundwater source rather than reservoir capacity to meet water demands. Most wellfield power supplies have the capacity to be fed from more than one power substation, which reduces the potential for long-term outages. Experience has shown that no wellfield has been out of service for more than one hour due to an electric supply failure. From an electrical reliability standpoint, the risk of more than one wellfield being down because of an electrical outage is remote. Four wellfields are located in flood plains and subject to potential flooding effects. Flooding may not impact all wells within these wellfields.

Responses to these events include:

- Rely on water source capacity and power system redundancy to the extent possible. During the summer peak demand times there is no excess source capacity. During the remainder of the year sources can be activated that are not affected by the interruption.
- In the short-term (less than one-half day in summer and about one day in winter) rely on water tank storage.
- Apply conservation measures (Element 6).
- Institute adopted four-stage water curtailment plans in both the SUB and Rainbow Water District service areas based on the system's ability to maintain reservoir levels for fire protection (original DWPP - Appendix E)

### **C. Detection of Contamination at a Well**

The required response to the detection of contamination at a wellhead depends on whether the contamination is less than or exceeds the maximum contamination level (MCL). The MCL is considered to be the maximum allowed concentration of contaminant in drinking water without posing a significant health risk. The community has applied a much higher standard in responding to man-made chemicals, like Dense Non-Aqueous Phase Liquids (DNAPL), and other volatile, semi-volatile, and synthetic organic chemicals. Every effort will be made to eliminate any detectable amounts of the man-made substances from the drinking water supply.

- Notify the Oregon Department of Human Services – Drinking Water Division (formerly Oregon Health Division, OHD) (1-503-731-4381) and Department of Environmental Quality (DEQ) (see original DWPP – Appendix H) of any confirmed detection.

#### **If the contaminant exceeds the MCL:**

- Send news release to local media.
- Notify local elected officials.
  - SUB staff will notify Board members.
  - Rainbow staff will notify Board members.
  - Springfield City manager's office will notify City Councilors.
- Follow OHS-DWD Public Notice requirements identified in Oregon Administrative Rules 333-061-0042.



- Shut down the affected well(s). If an emergency exists and permission to use the well(s) is granted by ODHS-DWD and DEQ, water will be mixed with water from other wells to reduce the contaminant in the distribution system to below the MCL, minimizing the concentration of the contaminant to the greatest extent possible.
- Flush affected system and reservoirs.
- Implement curtailment or conservation plan as needed.
- Work with Water Resources Division to notify other nearby well owners and minimize contaminant movement. Water master, Michael Mattick, 756-1856.
- Expand cooperation with agencies in investigation the contamination.

**If the contaminant level is below the MCL:**

- A minimum of quarterly monitoring will occur to track changes in contaminant levels over time to verify that contaminant levels remain below the MCL.
- If contamination is detected at WEYCO Wellfield, initiate SUB, Rainbow Water District, and Weyerhaeuser Memorandum of Understanding that details the responses required and which may include turning on the carbon treatment system.
- Turn off well if not absolutely needed (non-critical demand periods). If an emergency exists, water will be mixed with water from other wells to reduce the contaminant in the distribution system to below the MCL, minimizing the concentration of the contaminant to the greatest extent possible.
- Modify well operation to *last on, first off* during critical demand periods.
- Run only in conjunction with other wells.
- Notify local elected officials.
  - SUB staff will notify Board members.
  - Rainbow staff will notify Board members.
  - Springfield City manager's office will notify City Councilors.
- Send news release to local media.
- Implement first stage conservation measures (Section 6 in this chapter and Appendix E Water Curtailment Plan).

- Work with RWD to notify other nearby well owners and minimize contaminant movement. Water master, Michael Mattick, 746-1856.
- Cooperate with agencies investigating the contamination.

**D.E. Contamination from a Leaking Underground Fuel Storage Tank or Chemical Spill at a Nearby Business and Railroad or Highway Spills:**

The release of a contaminant from spills and leaking underground fuel storage tanks is primarily addressed through the proactive management strategies intended to reduce the likelihood of this risk. Standard operating procedure between Springfield Fire Department and SUB, Rainbow, and Eugene Water & Electric Board treatment plant is for notification of all releases in Springfield and upstream on the McKenzie and Willamette rivers from the Fire Department to water suppliers. The water suppliers coordinate their responses based on risk of drinking water contamination.

In the event of a contaminant release from underground fuel storage tanks or spills in the drinking water protection area adjoining surface waters, the following protocol applies:

**Within a Zero to 5-Year TOTZ**

The entire management area for surface water protection is within 1,000 feet of the Middle Fork Willamette River. Therefore, any spills or leaks within the management area would be considered within a Zero - 5 year TOTZ and treated accordingly.

- Inventory and rank chemicals used in the drinking water protection area (Chapter 4) and prepare related responses. This work is under way and will be completed in the near future. It is intended that the inventory and responses will be complete prior to being needed. DNAPL chemicals are an extreme risk in this aquifer setting, and immediate clean up and removal is necessary.
- Contact Springfield Fire & Life Safety (9-1-1) when immediate response is needed.
- Contact Springfield Fire Marshal (726-3737), Oregon State Fire Marshal (1-503-378-3473), and CHEMTREC (1-800-424-9300) to determine spilled chemical characteristics and cleanup recommendations.
- Notify all responders that a release is within the drinking water protection area.

- Shut off nearby public water wells and/or surface water intakes as an immediate precaution.
- Determine short-, medium-, and long-term well operation.
- Follow communication and notification procedures contained in Element 4 in this Chapter.
- Work to facilitate an expedited cleanup, but leave cleanup to the responsible party.
- Coordinate with responsible party's contingency plan.
- Implement conservation or curtailment plan as appropriate.
- Notify local elected officials.
  - SUB staff will notify Board members.
  - Rainbow staff will notify Board members.
  - Springfield City manager's office will notify City Councilors.
- Send news release to local media.
- Work with RWD to notify other nearby well owners and minimize contaminant movement. Water master, Michael Mattick, 746-1856.
- Cooperate with DEQ and other responsible agencies to facilitate cleanup and any remedial action.

**F. Spill in the McKenzie River, Willamette River, Springfield Millrace, or the Storm Water Systems that Discharge to the Rivers or Millrace:**

- Contact Springfield Fire & Life Safety (9-1-1) when immediate HAZMAT response is needed.
- A contaminant release to surface waters may impact surface water entering SUB's intake on the river and the drinking water wells, notify all responders that the release is within the drinking water protection area.
- Contact Springfield Fire Marshal, Oregon DOT, Union Pacific Railroad, DEQ, or other appropriate agency, Oregon State Fire Marshal, and CHEMTREC to determine spilled chemical characteristics and cleanup recommendations.
- Follow communication and notification procedures contained in Element 4 of this plan.

- Shut off nearby public water supply sources as an immediate precaution.
- Determine short-, medium, and long-term well and river intake operation
- Monitor outflows to receiving drainage ways for contaminants. The fire and public works departments should take extra precautions to prevent contaminant runoff.
- Work to facilitate an expedited cleanup, but leave cleanup to the responsible party.
- Implement conservation or curtailment plan as appropriate.
- Send news release to local media.
- Cooperate with DEQ (see original plan, Appendix H) and other responsible agencies to facilitate cleanup and any remedial action.

Removal of biological contaminants is part of the on-going treatment. Response to spills is different for surface water because the contaminant will be moved down stream by river flow. Surface water travels great distances within a short time. Any detected contamination within the surface water management area, the Middle Fork or its perennial tributaries is considered a high risk to Springfield's drinking water supply and will be handled accordingly. SUB's emergency response would be to shut off the river intake during the time the contaminant was present.

Because surface water is a relatively minor component of Springfield's total drinking water resource, primary threats to Springfield's drinking water system remain as stated in the existing *Plan*. These are related to an interruption of water delivery or contamination of the aquifer used for the primary drinking water supply. However, contamination of surface water could also result in groundwater contamination.

### **3. Prioritization of water usage**

This element prioritizes community needs in case the water supply is interrupted and/or a replacement supply is necessary. Prioritization of water use from highest to lowest is established in the adopted Water Curtailment Plans and as developed in the Springfield Drinking Water Citizen Task Force mock exercise as follows:

- Fire protection
- Hospitals
- Emergency evacuation shelters
- Nursing homes
- Schools
- Residents
- Industrial/commercial

- Public parks
- All other

#### **4. Key personnel and development of a notification roster**

In the event of an emergency situation threatening the water supply, key people must be notified and response procedures coordinated among SUB, the City of Springfield, City of Eugene, Rainbow Water District, Lane County, State of Oregon, and other appropriate jurisdictional personnel.

If a call is received by the 9-1-1 center, the fire department and police department are to be dispatched to the event of an emergency spill. The nature and location of the incident determines who is dispatched. If the incident involves a vehicle accident, the police department is often the first to be notified. If the event is non-vehicle related and a spill is reported, the appropriate fire department is normally the first to be notified by the 9-1-1 dispatch center. Both fire and police will be notified if a contaminant is known to be present. The incident commander will notify dispatch of the need for Regional HAZMAT Response Team. With all spill reports in the Springfield area, the Dispatch Center notifies EWEB Hayden Bridge Treatment Plant. The plant operator on duty notifies SUB and Rainbow Water District and relays all information available.

During an emergency spill event, an incident command center is established to safely control the situation. The incident command system is dynamic, meaning that as events unfold, roles and responsibilities of personnel may change as the situation progresses. The person in charge may also change depending on which agency responds first. For example, police may be first on the scene and in control until the fire department arrives. If a spill occurs within the drinking water protection area, SUB, Rainbow, and Springfield Public Works Department (PWD) should be notified immediately. The police, Rainbow, and PWD personnel are responsible for aiding the fire chief in adequate, appropriate, and safe actions.

Key personnel and their roles are as listed below:

##### **Springfield Police (Emergency 9-1-1, Administrative 726-3714)**

Police personnel are often the first to be dispatched and respond to an emergency event. Police are in charge of public safety until fire department personnel arrive, then the incident command control is relinquished to fire department personnel. At the direction of the fire department incident commander, the police are responsible for keeping the area secured and providing support help.

##### **Springfield Fire Chief (Emergency 9-1-1, Administrative Dennis Murphy, 726-3737)**

The fire chief or other designated fire personnel will be responsible for determining if local personnel can adequately and safely respond to a spill event. The incident commander will contact Oregon Emergency Response System and request a Regional HAZMAT Response Team if the situation and/or contaminant is beyond local

equipment and personnel capabilities. If it is determined that local response is adequate, the incident commander determines and directs what is needed from police, SUB, Rainbow, and City personnel through a unified incident command system.

**Springfield Utility Board Water Department Director (Ken Cerotsky, Work and after hours emergencies 746-8451). After hours notice is routed to Water Production call out list.)**

This person coordinates necessary actions, making any decisions regarding the operation of the SUB water system. In the event the department director is not available, the SUB *Integrated Contingency Plan* will be initiated. This plan establishes that the most responsible SUB personnel contacted is the responsible person for the Utility, until such time as they are replaced in accordance with the plan. SUB Water Department director provides technical assistance and backup support as directed by the incident commander. It is this person's responsibility to inform the incident commander of the spill location within the drinking water protection area and suggest any additional precautionary measures that need to be considered. Operational situations that may affect Rainbow or other public water suppliers will be coordinated directly with the responsible representative for the appropriate supplier as soon as possible. The Oregon Department of Human Resources – Drinking Water Program (formerly Oregon Health Division) will be immediately notified. In the event of any drinking water contamination, SUB Water Department director will designate a media relations person who will prepare a press release and handle all media for SUB.

**Rainbow Water District Superintendent (J. Timothy Hanley, work and after hours emergencies, 746-1676). After hours notice is routed to the on-call person.**

This person coordinates necessary actions, making any decisions regarding the operation of the Rainbow water system. Rainbow Water District superintendent provides technical assistance and backup support as directed by the incident commander. It is this person's responsibility to inform the incident commander of the spill location within the drinking water protection area and suggest any additional precautionary measures that need to be considered. Operational situations that may affect SUB Rainbow or other public water suppliers will be coordinated directly with the responsible representative for the appropriate supplier as soon as possible. The Oregon Department of Human Resources – Drinking Water Program (formerly Oregon Health Division) will be immediately notified in the event of any drinking water contamination. Rainbow Water District superintendent will designate a media relations person who will prepare a press release and handle all media contacts for Rainbow.

**Land County Sheriff's Office, Emergency Response Coordinator (Ike Jenson, 682-4160)**

The Lane County emergency coordinator should be notified and will inform the Lane County Public Health Department and the Oregon Emergency Response System, who in turn notifies other appropriate state agencies. Usually, the fire chief notifies the

county coordinator if the event requires county resources for response. However, if the county coordinator is notified first, he will notify SUB, Rainbow, and/or the appropriate water supplier when a spill emergency occurs within the drinking water protection or surface water management area.

Other local officials to be notified include:

**Springfield City Manager (Mike Kelly, 726-3700)**

**Springfield Mayor (Sidney Leiken 726-3700)**

Other state and federal contact numbers include:

**Oregon Department of Human Resources, Tom Charbonneau, Regional Engineer, 1-503-0731-4381**

**Oregon DEQ, Western Region Phone list, Appendix H**

**Oregon Resources Division, Michael Mattick, Water master, 746-1856**

**Oregon State Fire Marshall, 1-503-378-3473**

**Chemtrec, 1-800- 424-9300**

Call this 24-hour Emergency Notification number to report transportation related spills and to get MSDS sheets and related clean-up information on chemicals that have been spilled. Internet address: [www.cmahq.com](http://www.cmahq.com)

No additional changes are anticipated to existing procedures within *Springfield's Drinking Water Protection Plan* for inclusion of the surface water management area of the Middle Fork.

## **5. Short-term and long-term replacement of water supplies**

In the event of an emergency, the minimum water needs of the community must be met with water that meets applicable health standards. Short-term options are those where the alternative supply is needed for a few hours or days. Long-term options are considered for a permanent replacement supply.

Changes included within the Plan Addendum (2002) are not applicable to the City of Springfield's primary drinking water supply (well water). Short and Long-term options for water supplied from wells remains as laid out in Springfield's existing *Drinking Water Protection Plan*.

### **Potential short-term drinking water:**

- Implement curtailment plan existing *Drinking Water Protection Plan – Appendix E*) and conservation practices.
- Purchase water from EWEB.
- Bottled water.
- Deliver potable water from non-affected wells with private tanker trucks and/or notice to insure public health.
- Make water available for only a short duration each day and issue a *Boil Water* notice to insure public health.

### **Intermediate-term**

Recommendations within the existing Springfield Drinking Water Protection Plan are extended to include drinking water from surface water sources.

- Same as short-term.

### **Long-term**

- Develop new well(s).
- Construct well treatment facilities.
- Expand capacity or treatment capabilities of water treatment (slow sand filter) plant (capacity limited to existing water rights on the Middle Fork Willamette River).
- Purchase water from EWEB

## **6. Short-term and long-term conservation measures**

Conservation of water use will lesson demands on Springfield's public water supply system in the event of an emergency situation. This element identifies short-term and long-term conservation practices that could be implemented as a function of user needs identified in Element 3, Prioritization of Water Usage. The extent of conservation/curtailment measures necessary will depend upon the nature and extent of the emergency. Generalized conservation /curtailment practices that can be applied across land uses are identified below and are extended to cover surface water drawn from the Middle Fork.

- Encourage conservation implementation in all uses prior to an emergency.
- Prohibit outdoor water use.



- Provide water for drinking water purposes only.
- Administer fines to violators of water misuse or overuse in the event of a water shortage emergency.
- Make water available for a short duration every day.
- Drop water pressure so that overuse is unlikely.
- Review individual commercial/industrial use on a case-by-case basis to determine critical need.
- Educate people about the emergency and necessary actions.

**Willamalane Parks and City of Springfield:** Park and City irrigated turf areas will not be irrigated from the SUB or RWD public water supply systems during a water emergency. Some parks have auxiliary surface water sources and wells. In most instances these auxiliary supplies will not be affected by these curtailment measures unless they compromise the public system. Street flushing and sweeping with water will be curtailed.

**Commercial/Industrial/Agricultural auxiliary water supply wells:** SUB and RWD should seek cooperation from owners of wells whose operation might affect water availability to the SUB and RWD public water supply wells. Auxiliary wells in the vicinity of the public water supply wells may also influence the flow of contamination by drawing water more quickly toward the public wells. Well owners should be notified in the event of an emergency that their cooperation in reduced water use might be requested.

**Emergency Evacuation Shelters and Schools:** Schools can reduce water use primarily by eliminating grounds irrigation. In a temporary emergency, tankers for drinking water and other essential functions should be stationed at the school or emergency shelter to keep them in operation.

**McKenzie Willamette Hospital:** The hospital is encouraged to develop a water contingency and conservation plan. In a temporary emergency, tankers for drinking water and other essential functions should be stationed at the hospital to keep them in operation. For auxiliary potable water supply the hospital's irrigation well can be treated with a portable treatment system from the National Guard or treatment equipment supplier.

**Industry/Commercial:** Many businesses already have a contingency plan in place that identifies water conservation practices in the event of a water shortage. Businesses should be informed that in the event of a water emergency, their water

use may be curtailed and it is in their best interest to develop a conservation plan if they do not already have one.

**Resident:** Common conservation measures for residential use include limiting practices such as lawn irrigation, car washing, laundry use; and installing conservation devices such as low-flow shower heads. SUB publishes a variety of information on water use reduction and conservation practices. Additionally, Oregon Water Resource Department, DEQ, and the American Water Works Association also publish information on water conservation. SUB and RWD should educate customers on water conservation practices prior to a water emergency. These educational efforts are described in Element 9.

**Fire Department:** In the event of a fire during a water supply emergency, the fire department has top priority for water usage. The Springfield Fire & Life Safety Department must be notified when an emergency water conservation or curtailment plan is going into effect. The notification shall include specific operational details such as low pressure areas and isolated zones in the water distribution system in order for fire personnel to make informed decisions about fire suppression. Communication between the fire chief and stand-by personnel is critical. Additionally, the fire department should identify alternative sources of water for fire response services to insure fire protection.

## **7. Plan Testing, review, and update**

This contingency plan will be evaluated, reviewed, and updated using an annual review and periodic mock exercise. SUB and Rainbow will review any personnel or substantial changes and make adjustments to the Plan annually. A copy of this Contingency Plan is included in SUB's Water Production Emergency Procedure Manual. The Emergency Procedure Manual is reviewed and updated quarterly with corrections or modifications to the plan taking place during the process. In addition, a simulated emergency (mock exercise) will allow emergency responders to make necessary adjustments to the plan. Mock exercises will also serve as an educational tool for local citizens, reminding the community of the importance of protecting their drinking water supply and of the curtailment measures that might be imposed in the event of an emergency.

## **8. Personnel training**

To be effective, contingency plans must rely on properly trained personnel operating within a well-organized and effective system with up-to-date information. County and state emergency responders have been professionally trained to deal with HAMAT responses. Local personnel should also be trained in initial HAZMAT responses since they could be the first to arrive on site. Police officers receive HAZMAT awareness level training as part of their officer-training program. Currently, all fire personnel receive HAZMAT operations level training. With this level training, local personnel are able to adequately identify and contain many hazardous materials.

## **9. Provisions for public education**

Public notification and education information builds and maintains support for the plan. It further encourages assistance and understanding when an emergency arises and the plan is put into effect. Management strategies for the *Springfield Drinking Water Protection Plan* have a strong educational imperative that satisfies this component of the contingency plan. However, before an emergency occurs residents and businesses must be informed about the conservation and curtailment measures they will be expected to apply. This information should be prepared and distributed prior to a contamination or supply interruption.

SUB provides water only to residences and businesses within the city of Springfield. Therefore conservation and curtailment of services would apply only to those areas. However, surface water that supplements existing groundwater sources is located entirely outside the city. Therefore, education to inform the public about protecting this resource will be based on the impact contaminants will have on the community and how limited surface water resources could affect them. Public education outside the city of Springfield will be coordinated through the MFWWC.

## **10. Logistical and financial resources**

The City, SUB, and Rainbow Water District should participate in an emergency response situation only to the extent of providing assistance and information regarding the water system and the particular needs of the community. The City, SUB, and Rainbow should not attempt any clean up on their own, although containment may be appropriate. The responsible party is legally obligated to report and clean up chemical releases. If no responsible party is found, the community may need to finance clean up or treatment. Potential funding sources include:

- State emergency funds
- Federal emergency funds
- A bond measure for replacement, treatment, or clean up needs

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## **Chapter 7: New Well Site Analysis**

This section deals with development of new wells to meet the drinking water demand of an increasing population and is not applicable to surface water resources.

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