SL312

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Drinking Water Source Protection in the Tampa Bay Region: A Guide for Government Officials[1]

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Introduction and Purpose

Source water protection is extremely important for public health, environmental quality, economic development, and quality of life. However, rapid population growth and land development in the Tampa Bay region have resulted in drinking water sources being located in close proximity to developed urban or suburban areas. As a result, the risk for contamination of these sources is increasing. The purpose of this publication is to familiarize government officials with some of the regulatory and non-regulatory tools that can help to protect local sources of drinking water.

Threats to Drinking Water Quality and Quantity

Drinking Water Contamination

Potential drinking water pollutants originate from point sources, such as domestic and industrial wastewater discharges, and non-point sources, such as runoff or leachate (water that moves through the soil to the groundwater) from urban, suburban, industrial, and agricultural areas. Some of the potential contaminants of drinking water supplies include microorganisms, radioactive elements (e.g., radon), inorganic contaminants (e.g., nitrate, lead, phosphate), organic contaminants (e.g., gasoline, pesticides), disinfectant by-products, pharmaceuticals and personal care products.

Supply issues

Population growth and urbanization in the Tampa Bay region over the last several decades have also led to an increase in demand for potable water. These demands are only expected to increase as the population of the region continues to grow. The water supply sources that provide drinking water to the region also provide irrigation water for agriculture and home/commercial landscapes and water needed for the proper function of our natural ecosystems. In addition, recent drought conditions have further stressed the water supply, making it more and more difficult to ensure adequate amounts of water available for all users.

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Local Government Practices that Protect Source Water: Regulatory Tools

Since many of the threats to our drinking water sources are related to land use and population growth, land use planning (using tools such as zoning ordinances or building codes) provides an effective method of protecting local sources of drinking water. Effective zoning ordinances and building codes can promote groundwater recharge and limit the potential for pollutants to reach our water bodies via runoff and/or leaching.

Zoning tools

Zoning tools can be used by local governments to protect drinking water sources when implemented through local ordinances. Zoning tools typically limit activities or land uses that may lead to contamination of the drinking water source waters. Alternatively, they may require permits or provide incentives to limit these activities in the vicinity of source waters. These practices can protect both surface and groundwater sources of drinking water. Some examples of zoning tools include:

- *Critical area zoning* limits the type of land use in water supply watershed, floodplains, wellhead protection areas, groundwater recharge zones, and other sensitive area to those uses that are considered to be lower intensity (e.g., agriculture or recreation).
- Areas of land adjacent to drinking water sources can be designated as *setback or buffer zones*. Buffer areas or setbacks protect water by slowing and filtering runoff water and are most effective when left undisturbed with natural vegetation intact. The appropriate width of buffer zones is variable based on local conditions, but 50 to 400 ft is suggested. Buffer zones can also provide flood protection, wildlife habitat, and recreation areas.
- *Agricultural zoning* can reduce the amount of urbanization by protecting sensitive areas from escalated land values. This decreases the pressure on farmers to sell their land to developers.
- *Cluster zoning* can be used to protect open space by establishing the number of structural units permitted on an individual parcel without dictating a minimum lot size. Under these conditions, development can be clustered on a smaller portion of the land parcel.
- *Impact fees* are commonly assessed on new development to help pay for a project's impact on roads, schools, and fire networks. Impact fees can also be assessed and collected to offset the impacts of development on water resources.
- *An overlay district* is an additional zoning restriction that is placed on a land area in conjunction with underlying zoning. Development in an overlay district must meet all zoning requirements. Examples of overlay districts that can protect water quality include source water, floodplain, wetland or aquifer overlay districts.
- *Performance–based zoning* allows for a wide variety of land uses provided the land use adheres to specific criteria, such as sewage capacity, impervious cover limits, or acceptable runoff volumes.

Building Codes

Traditionally, building codes have been used to protect the health and welfare of citizens. Some types of building codes can be used by local governments as a means to protect surfaces sources of drinking water. Examples of building codes that can protect drinking water supply include:

- Limits on the number of *building permits* issued within a time frame or geographic area.
- *Excavation and grading codes* can reduce the amount of runoff that will occur once construction is complete.
- Building codes can limit the proportion of a site that can be covered with *impervious surfaces* (e.g., roads, roofs, parking areas, driveways, etc.) unless there are provisions for the collection and/or treating of runoff from the site. Building codes can also specify the use of permeable or pervious materials for the construction of

surfaces that would traditionally be covered with impervious surfaces.

- On-site *wastewater treatment/septic systems* codes require the treatment of wastewater in large rural areas that are not serviced by the public utility.
- *Underground storage tank codes* prohibit the use of these tanks for the storage of petroleum or other hazardous substances in source water protection areas.

Local Government Practices that Protect Source Water: Non-Regulatory Tools

While the use of zoning and building codes presents a regulatory approach to source water protection, there are several non-regulatory actions that can also protect the drinking water supply. Non-regulatory approaches typically receive greater public acceptance than regulatory approaches and should be part of a comprehensive source water protection plan. Examples of non-regulatory approaches to source water protection include:

- *Best management practices* (BMPs) are procedures designed to limit pollution from urban, suburban, industrial, and agricultural lands. Best management practices can be regulatory or non-regulatory in nature. There are two broad categories of BMPs: structural and behavioral. Structural BMPs are constructed systems designed to minimize the impacts of pollution. Examples of structural BMPs include vegetative swales, infiltration basins, and constructed wetlands. Behavioral BMPs use education and outreach activities to reduce pollution by changing behaviors of residents. For example, educating homeowners and farmers about the proper use and timing of fertilizers and pesticides can help to reduce the potential for contaminant losses via runoff and/or leaching.
- *Site restoration* includes a variety of activities that help correct problems that occurred as a result of land use practices. Examples of site restoration practices include brownfield restoration, underground storage tank removal and clean up, and revegetation of disturbed lands.
- *Land acquisition programs* allow local governments to purchase or obtain lands through donations to create protective buffer areas around drinking water source waters (e.g., reservoirs, well fields, wetlands). Funding for land acquisition may be available through programs like the Drinking Water State Revolving Loan Fund.
- *Conservation and reuse activities* can preserve the amount of drinking water available. Water use restrictions and water reuse programs (reclaimed water) are common water management activities throughout Florida including the Tampa Bay Region.
- *Public education and awareness campaigns* are also valuable for source water protection. Public education about source water protection in the Tampa Bay region is conducted by Tampa Bay Water, the Southwest Florida Water Management District, the University of Florida/IFAS Extension, and the Florida Department of Environmental Protection.

Summary

Source water protection is critical for the public, environmental, and economic health of the Tampa Bay Region. Implementation of a source water protection program, while costly, can significantly decrease the threats to the public drinking water supply and prevent the need for more costly interventions (e.g. water treatment, locating alternate drinking water supplies) in the future. This publication provides an overview of some of the tools (both regulatory and non-regulatory) that government officials can use to protect drinking water supplies. More detailed information about source water protection tools is available in the following references.

References

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