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# Anacortes Water Comprehensive Plan Technical Memorandum



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**Date:** November 22, 2010  
**Subject:** Watershed Control Plan Update  
**To:** File  
**From:** Eric Habermeyer and Jeff Hansen, HDR

This technical memorandum presents an update to the City of Anacortes' (City) Watershed Control Plan (WCP).

## 1. Purpose of Watershed Control Plan

The Washington Department of Health (DOH) is responsible for the regulation and protection of our State's drinking water sources. Compliance with DOH regulatory standards is achieved using a variety of methods, depending on the type of water source involved and the current and projected demand on the water system. In systems where the primary source is surface water, such as a river, the source may be susceptible to contamination from a variety of sources throughout the watershed. In an effort to address this issue, DOH requires a Watershed Control Program to be implemented to minimize the risk posed by these potential sources of contamination.

The City initially developed its WCP in 2004, to meet the following objectives:

- to describe the watershed;
- maintain an up-to-date land use inventory;
- identify potential sources of contamination;
- describe watershed control measures;
- evaluate water quality trends and monitoring practices;
- evaluate treatment operations;
- evaluate the risks associated with potential sources of contamination;
- describe planned public education and outreach programs;
- summarize existing emergency spill response and contingency plans; and

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- provide recommendations for future watershed program improvements.

To meet requirements in WAC 246-290-135, systems must update their watershed control plans every six years as part of updating Water Comprehensive Plans.

This 2010 Watershed Control Plan Update (WCP Update) has been developed to document and summarize changes in the watershed, activities conducted by the City to manage and protect water quality of this source, and planned efforts to continue protecting the City's Skagit River supply.

## **2. Update Approach**

This WCP Update was prepared as part of the 2010 City's Water Comprehensive Plan. This update was developed by reviewing available data and information from the City. In addition, Washington State Department of Ecology's (DOE) Facility/Site Identification Database was used to develop the potential point source contaminant inventory.

## **3. Watershed Description**

The term "watershed" can be defined in a variety of ways depending on the application and context. The Washington Administrative Code defines the term, in relation to the regulation of drinking water, as "the region or area that ultimately drains into a surface water source that is diverted for drinking water supply; and affects the physical, chemical, microbiological, and radiological quality of the source." In the case of the Skagit River Watershed, this definition encompasses an extensive area and involves multiple jurisdictions. For the purpose of regulation at the local level, this definition creates an impractical implementation area that covers thousands of square miles and extends into Canada. It was therefore necessary to more narrowly define the area to be considered in the WCP and in this update document.

The watershed was defined in the 2004 WCP using computer-based watershed delineation tools and elevation data from the U.S. Geological Survey. No data were available for the portion of the watershed that extends into Canada, and since this area is outside of state and local jurisdiction, it was not included. The Skagit River Watershed is comprised of Water Resource Inventory Areas 3 and 4, as defined by the Washington Departments of Ecology, Natural Resources, and Fish and Wildlife in 1970.

The City's WCP program area includes approximately 80 square miles within the Skagit River Watershed located in western Skagit County. The program area is mostly contained within Water Resource Inventory Area 3, the Lower Skagit-Samish Basin. Rolling foothills and floodplains characterize the terrain. Natural vegetation includes species such as western hemlock, western red cedar, red alder, and Douglas fir. Land use is dominated by forestry and agriculture. The municipalities of Burlington, Concrete, Hamilton, Lyman, Mount Vernon, and Sedro-Woolley are located in the program area. The primary population centers are Burlington, Mount Vernon and Sedro-Woolley.

Figure 1 depicts the program area location. Additional detail is provided in the 2004 WCP. The program area delineation has not changed from that presented in the 2004 WCP.

## 4 Source Description

The City owns and operates a regional water treatment plant located near Mount Vernon on the east bank of the Skagit River. The plant was constructed and placed in operation in 1971. The City's water system serves Anacortes, La Conner, Oak Harbor, the Tesoro and Shell Oil Refineries, the Swinomish Indian Reservation, portions of the PUD service area, and numerous other industrial customers. The supply for the City's water treatment plant is from the Skagit River, where there is an intake providing water to the City and other jurisdictions.

## 5 Water Quality

Skagit County currently monitors water quality within the watershed at 41 permanent locations. Each site in the monitoring program is visited every two weeks where dissolved oxygen, temperature, pH, turbidity, conductivity, salinity, and fecal coliform are measured, with additional samples collected for total nitrogen, ammonia, nitrate, nitrite, total phosphorus and total suspended solids on a quarterly basis.

Table 1 presents a comparison of water quality data collected in recent years at Site 29 - Skagit River at River Bend Road and Site 30 – Skagit River at Cape Horn Road. These site locations are identified on Figure 1.

**Table 1 Water Quality Data for Two Monitoring Sites on the Skagit River**

Water Quality Parameter	Unit	Skagit River at River Bend Road Site #29	Skagit River at Cape Horn Road Site #30
		2003 – 2009 Average	2002 – 2006 Average
Fecal Coliform	cfu	33	10
Ammonia-N	mg/L	0.06	0.02
Nitrate/Nitrite-N	mg/L	0.08	0.09
Oxygen	mg/L	11.10	11.31
pH	pH unit	7.32	7.29
Suspended Solids	mg/L	30	28
Temperature	°C	9.1	8.5
Total Phosphorous	mg/L	0.06	0.07
Turbidity	NTU	19.70	13.22

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## 6. Land Use

Land use in the program area is dominated by agriculture. The majority of land is privately owned; public lands are located primarily within the city limits of municipalities.

Skagit County is required to plan land use and zoning under the State's Growth Management Act. Land located within the program area and outside the city limits of municipalities is subject to regulation under the Skagit County Comprehensive Plan, land use and zoning regulations. Incorporated cities within the program area have individual comprehensive plans to regulate land use and zoning within city limits.

Sources of potential water supply source contamination within the program area are of paramount concern in the development and implementation of the WCP. To that end, a list of Potential Contaminant Sources (PCSs) was developed for use in the 2004 WCP. The PCS list is comprised of parcels within the program area where the current land use designation is one considered to pose a threat to water quality in the Skagit River.

Three aggregate groups of PCSs were created for use in the 2004 WCP:

- **Agriculture**, including cropland, pasture, and orchards
- **Commercial/Industrial**, including manufacturing, retail, construction, mining and other resource production
- **Transportation**, including associated parking and maintenance facilities

These PCS groups were developed by grouping activities associated with land use designations from the Skagit County Comprehensive Plan, which are assigned to individual parcels by the Skagit County Assessor's Office. Table 2 describes the types of contaminants associated with these activity groups. Figure 1 depicts the location and extents of each of these designations throughout the program area.

**Table 2 Activities and Contaminants Associated with PCS Groups**

<b>PCS Group</b>	<b>Activities</b>	<b>Contaminants</b>
<b>Agriculture</b>	Fertilizers/herbicides/pesticides Contained animal feeding operations Lagoons and liquid waste Irrigation/erosion of natural deposits	Organic Inorganic Trihalomethanes Microbial
<b>Commercial/Industrial</b>	Fabrication/manufacturing Synthetics/plastic production Chemical/petroleum processing Wastewater discharge	Organic Inorganic Trihalomethanes Microbial Radionuclides
<b>Transportation</b>	Maintenance/fueling areas Stormwater runoff Hazardous materials transport	Organic Inorganic Trihalomethanes

In addition, facilities regulated by DOE were considered potential sources of contamination. DOE is tasked with administration and enforcement of the National Pollution Discharge Elimination System (NPDES) in our State. Authorized by the federal Clean Water Act, the NPDES permit program regulates point sources that discharge pollutants into waters of the United States. DOE regulates these and other types of sites that pose a potential threat to the environment. DOE regulated sites located within the program area (as of a November 2010 review of DOE data) are listed in Table 3. Figure 1 shows the location and type of each site.

Within the program area, there are 189 potential point sources of contamination. This is significantly more than the 95 potential point sources identified within the same area as part of the 2004 WCP. The difference is likely due to changes in how DOE tracks and stores facility information. Many of these facilities are close to or within the Cities of Burlington and Mt Vernon.

According to DOE, there are 66 underground storage tanks within the program area and 18 leaking underground storage tanks. These sites could contaminate groundwater in the area and have the potential to affect the water quality at the source.

Sites that handle or generate hazardous waste also present potential for surface and groundwater contamination. The type of contamination that could occur is specific to each location and the materials being handled.

Additionally, contamination can occur due to accidental discharges or spills from or on major roadways and other structures. An inventory of such potential sources of contamination is provided in the 2004 WCP, and has not materially changed since it was initially developed.

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## 7. Watershed Control Program Strategies

In the case of the Skagit River Watershed and the program area defined in this document, obtaining or maintaining complete control of all potential contaminant sources is impossible due to the wide variety of land owners and uses present. In this situation, the goal of the WCP is not to control all potential contaminant sources, but to minimize the risk of potential contamination and the impact on the public drinking water supply if contamination does occur.

The City identified the following program strategies in the 2004 WCP. These strategies remain valid today, and the City plans to implement them as resources (both monetarily and in terms of staff time) allow during the six-year planning horizon.

### 7.1 Public Education

The most effective way to minimize the risk of source supply contamination in the program area is to educate the public about this risk. Land owners and users within the program area are most likely to cause an accidental spill; they are most likely to be the first point of contact with emergency management agencies by reporting a spill; and they are most able to prevent accidents through conscientious management of potential sources of contamination. The 2004 WCP contains specific education activities the City plans to implement in the future.

### 7.2 Emergency Notification

Once an accidental spill occurs or a peak flow event becomes imminent, the focus of the WCP is to facilitate an appropriate response to protect the public drinking water supply. Timely notification of key personnel at the state and local levels is essential in this situation. Travel times of contaminants to the City or PUD water intakes can be very short and will necessitate a prompt response to protect the public drinking water supply. Notification protocols are outlined in the 2004 WCP.

### 7.3 DOE Permit Holder Notification

This involves contacting individuals listed as holders of the environmental permits issued by DOE within the program area to describe and explain the WCP and explain to permit holders what they should do in the event of an accidental contaminant discharge. The City will evaluate the feasibility and cost of implementing this measure within the next six years.

### 7.4 Interlocal Agreements

Implementation of the WCP is dependent upon coordination among municipalities within the program area. The first step in fostering this coordination is to initiate communication with the governments of Burlington, Concrete, Hamilton, Lyman, Mount Vernon, Sedro-Woolley and Skagit County, as well as emergency management agencies, law enforcement, and other parties. The City will consider entering into Memoranda of Agreement with such entities.

### 7.5 Cooperation

The key to success of this WCP is the development of cooperation among state and local agencies, municipalities in the program area, the City and the PUD. These parties must be made aware of the WCP and their active, on-going role in its implementation. Potential coordination activities are identified in the 2004 WCP. The City will implement these measures as resources allow.



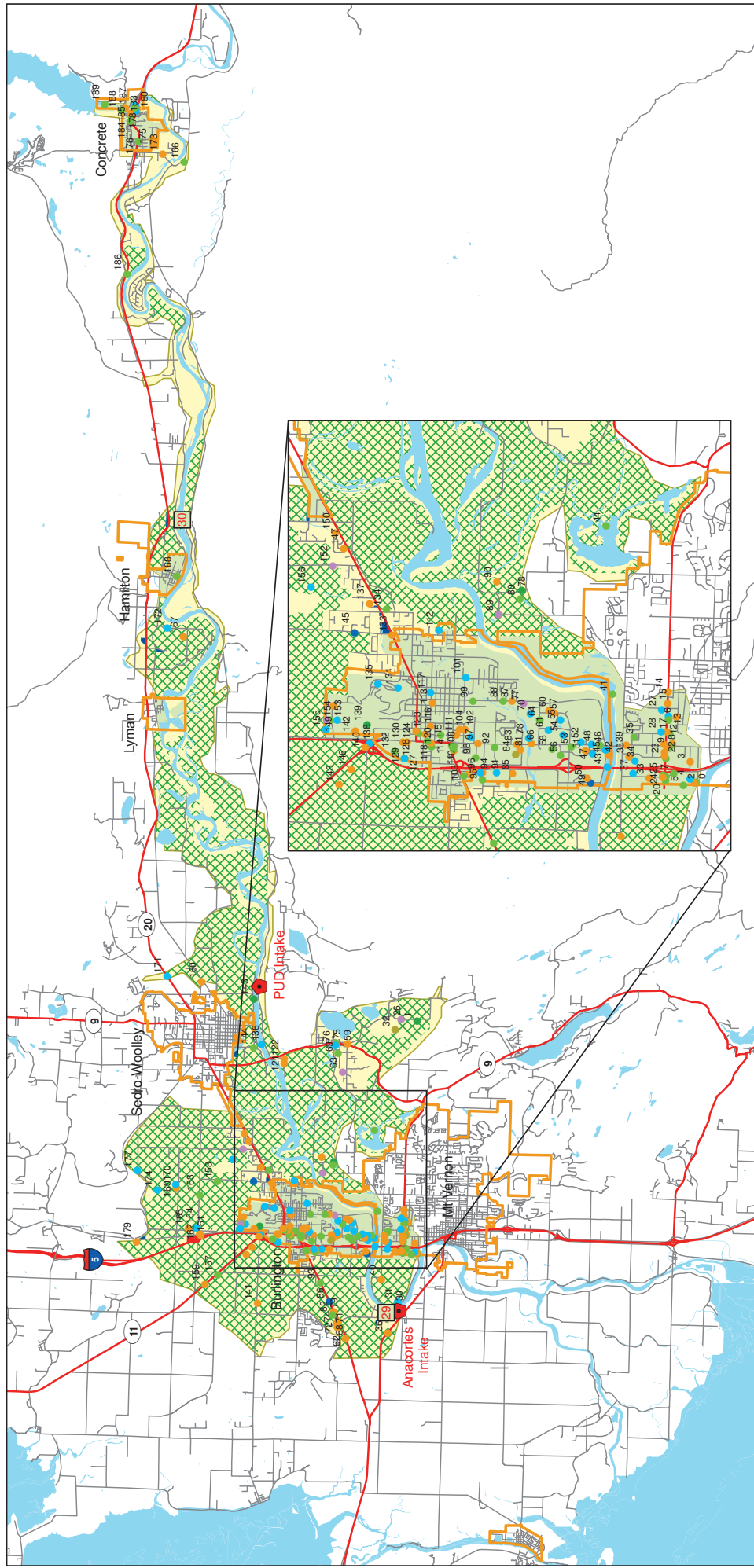
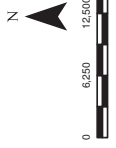


Figure 1  
 Watershed Control Program Area  
 Inventory of Potential Contaminant Sources  
 November 2010  
 City of Anacortes



- Legend**
- City Limits
  - Roads
  - Highway
  - Waterbody
  - Transportation
  - Industrial
  - City
  - Water Quality
  - Water Reservoir
  - Program Area
  - Skagit Co Monitoring Site
- DOE Facility Category**
- Hazardous Waste
  - Ecology Action Site
  - Spills
  - Toxics
  - Waste to Resource
  - Water Quality
  - Water Reservoir
  - Program Area
  - Skagit Co Monitoring Site

Note:  
 See Table 3 for listing of  
 potential contaminant sources

