COMPREHENSIVE PLAN

SECTION B, ELEMENT 4

WATER RESOURCES

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ELEMENT 4 WATER RESOURCES

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4.1 INTRODUCTION

San Juan County strives to achieve integrated water resources management throughout its jurisdiction. The County gained greater understanding of its water resources over the last 20 years through several plans and studies (Appendix A). These efforts focused on resource protection through a common goal of non-degradation for all water types- including surface and storm waters, groundwater, and marine receiving waters (see Appendix B for complete definitions of water types). Managing for resiliency, in both water resources and our community, is critical to minimizing the impacts of climate change on the hydrology and aquatic habitats we and other species rely upon.

San Juan County relies on precipitation as the only source of freshwater. Precipitation that falls on each island is the only source of recharge for surface and groundwater supplies. The percentage of precipitation that actually becomes groundwater recharge is extremely low, often less than 10%. The islands' geography is characterized by the rain shadow created by the Olympic Mountains to the south and Vancouver Island to the west, by predominantly steep terrain and bedrock geology, by small watershed catchment areas, and by extensive shoreline. These conditions result in lower rainfall than other areas of Western Washington, limited groundwater storage, and extensive runoff and drainage to the Salish Sea. The freshwater available on each island is isolated by the surrounding marine waters, which make our groundwater supplies near the shorelines at risk of seawater intrusion. Generally, water systems with wells located away from the shoreline have good water quality. However, some areas are experiencing seawater intrusion at this time. How we manage our water use for domestic and agricultural purposes, as well as treat and manage our storm and surface waters, is critical to ensuring all of our water resources are of the highest quality and quantity possible.

4.2 PLANNING

Since 2000, San Juan County has been active in water resource planning; adopting the Watershed Management Action Plan. This plan contained specific recommendations for addressing watershed contamination from several development, land use, and disposal related practices. The plan also resulted in the integration of several local organizations like the Lead Entity for Salmon Recovery and the Marine Resources Committee. These groups have completed several studies and projects to further understanding and improve fish habitat. The Water Resource Management Plan was adopted in 2004, addressing surface and groundwater quality and quantity issues, water rights, and existing water systems capacity to serve projected growth. Groundwater availability from exempt wells, alternative water supply options, and water source approval were discussed in the plan. The Plan was a springboard for future studies and research by the Water Resource Management Committee. The entire list of Plans can be viewed in Appendix A.

4.2.1 Critical Aquifer Recharge Areas

The entire County has been designated a critical aquifer recharge area due to the fact that the County's aquifers are highly susceptible to contamination. The County has development requirements to assure a safe and adequate water supply by protecting the quantity and quality of water available for recharge.

4.2.2 Coordinated Water System Planning

With the goal of improving service and protecting a shared resource, the County worked with water purveyors to develop coordinated water system plans in three areas.

- The *San Juan Island Critical Water Supply Service Area Coordinated Water System Plan* was drafted in September 1990. The plan evaluated the existing water systems constructed at that time, including: source capacity, storage, transmission, and shared facility potential. In addition service areas for existing water systems were established allowing for the water systems to become the exclusive water service providers within those areas.
- In 2003, the *Lopez Village Abbreviated Coordinated Water System Plan* was adopted, establishing design guidelines for new and expanding water systems and outlining a process to direct new growth to existing public water systems in the area rather than creating new water systems. This supports the ability of existing water systems to continue to provide safe and reliable drinking water to their service areas. The Coordinated Water System Plan was adopted in response to the establishment of the Lopez Village Critical Water Supply Service Area in 2001. The Critical Water Supply service area was designated due to questions about whether water quantity and quality were adequate for the growth that was occurring in the area during that time.
- The *Eastsound Water Supply and Abbreviated Coordinated Water System Plan* was adopted in 2008. This established Eastsound Water Users Association (EWUA) as the sole water purveyor within their service area and set standards for timely and reasonable service. This plan ensured that all new development within the EWUA service area is served by that water system and not by individual or smaller water systems in the area.

4.2.3 Climate Change Considerations

Based on the University of Washington report published in 2015, titled: *State of Knowledge, Climate Change in Puget Sound*; the regional trend indicates that summer precipitation is likely to slightly decrease over time, with warmer, drier summers expected. However, periods of heavy rain may intensify during the spring months from March through May. The precipitation during these spring months from 1895 – 2014 has increased 27 percent for the region.

With ground and surface water resources dependent solely on precipitation to recharge, increasing periods of extended drought will require planning to ensure that adequate

water supplies are available. Water use efficiency and conservation are being implemented by some large water systems in the County, and have shown to be able to serve more with less water. Implementation County wide has the potential to ease demand on County water resources.

4.3 WATER SOURCES AND WATER USE OVERVIEW (Summary of existing condition, existing policies and past water resource planning efforts)

4.3.1 DRINKING WATER SOURCES

San Juan County's potable water needs are served by a large variety of public water systems and private exempt wells. 40% of the SJC population is served by Group A water systems (more than 14 connections), and 40% are served by private exempt wells, the remaining 20% are connected to Group B water systems (3 to 14 connections).

The predominant fresh water source in San Juan County is groundwater. There are over 5000 wells in the County. Between 55 and 60% of the county population is served by groundwater pumped from wells.

Approximately 35 percent (35%) of the County's population relies upon surface water for their drinking water supply. The two largest community water systems in the County are the Town of Friday Harbor, which is supplied solely by surface water, and Eastsound Water Users Association, which utilizes a combination of surface and groundwater. A table listing the County's large water systems is shown below.

There are over a dozen desalination facilities creating potable water in San Juan County, serving approximately 500 connections. In addition, San Juan County has historically approved new single family home development utilizing hauled water and rainwater catchment. Catchment is commonly used to augment a groundwater source. Because of its heavy reliance on local precipitation and infiltration for fresh water resources, the entire County is designated a Critical Aquifer Recharge Area.

4.3.1.1 Source Approval

San Juan County Code (SJCC) 8.06, administered by Health & Community Services (H&CS) contains minimum requirements for demonstrating a potable water source; as well as groundwater resource protection. The code applies to all potable water systems proposed for building permits and subdivisions. SJCC 8.06 complies with Growth Management Act (GMA) requirements for verification of water availability for building permits (RCW 19.27) and for subdivisions (RCW 58.17).

4.3.1.2 Building Permit Requirements

Prior to building permit approval, evidence of an adequate water supply must be provided.

1. Community Water Systems - A written notice from the community water system purveyor is required verifying that a water connection is available.
2. Individual Wells - For individual well approvals, a water well report verifying well construction, water quality testing, and well yield testing are required. In addition, a water meter is required at the wellhead, and a 100 foot radius around the well establishing a sanitary control area.
    (a) A seawater intrusion risk assessment is required where location and/or groundwater criteria indicate the potential for seawater intrusion. If necessary, a Hydrogeologic site evaluation performed by a Licensed Hydrogeologist is required.
3. Alternative water sources - Sources other than an individual well or connection to a public water system are also approved for a single-family residential building permit. Alternative sources require a recorded Operation and Maintenance covenant to be filed with the County Auditor. Alternative sources include: shallow wells with unsatisfactory bacteriological tests; water systems yielding less than 200 gallons/day; hauled water systems; rainwater catchment; seawater treatment; and wells needing treatment for arsenic, barium, or fluoride.

4.3.1.3 Subdivision Requirements

An adequate water source for each new parcel is required prior to subdivision approval.

Connection to Community Water System – A written notice from the community water system purveyor is required verifying that a water connection is available. Water services must be installed to the property line prior to subdivision approval.

New Community Water System or Individual Well - must demonstrate a minimum capacity of 1,000 gallons per day/connection, current bacteriological sample and a complete inorganic chemical analysis. Wells must be drilled and tested, ensuring that water is available prior to the creation of new lots.

4.3.1.4 Public water systems

Public water systems are those that serve more than 3 residential connections. They can also consist of water systems serving one connection if the public has access to water (i.e. restaurant, store, or church). In order to protect water resources, the County has established stringent minimum requirements when developing new water supplies to serve new subdivisions.

The San Juan County Board of Health adopted the first local drinking water code in August 1996, establishing rules and regulations for individual water wells and public water systems. There have been six revisions of the code since then, resulting in the current SJCC 8.06 *Water Wells and Water Systems.* This code adopts state drinking water and well construction rules by

reference establishing standards for resource protection, monitoring, and management. Requirements for new public water systems are:

- Proposed sources of groundwater for public water systems within one-quarter mile of an existing water system service area must apply to that system for service prior to drilling;
- All new public water systems using groundwater must demonstrate a source capacity of 1,000 gallons per day (gpd)/connection, but can design the system based on 350 gallons per day (gpd)/connection; and
- Water systems in areas designated as critical water resource areas, as part of their water system plans, must include resource protection including:
    - Conservation plan, water shortage contingency plan, watershed control, and management strategies such as: monthly meter readings, static level measurements, comprehensive monitoring, and coordination of well pumping with other water systems.

4.3.2 OTHER WATER USE SOURCES

Nationally over 70% of water use is associated with agriculture irrigation. San Juan County's agricultural sector is not significantly dependent on irrigation. However, there is irrigation occurring with surface water from ponds and groundwater. There is no available data on the water resources being used for irrigation and agriculture in the County.

Other Industrial water uses consist of gravel mining operations and concrete manufacturing. It is presumed that the sources for these operations are groundwater. Similar to the agriculture sector, there is not good data on the water resources being used for this manufacturing sector in the County.

4.3.2.1 Agriculture Water Use

Forage production and livestock are the dominant agricultural practices in San Juan County. Small farm production of both vegetable and fruit crops is increasing. Over 13,000 acres has been designated as Agricultural Resource land. Without adequate water, this designation is meaningless.

With proper management, our intensively managed farmland and pasturelands provide ecosystem services such as water filtration and wildlife habitat. In light of these benefits, as well as social assets including cultural history and open view corridors, agricultural water usage must be factored into County water planning.

As the islands' populations have increased, the demands on groundwater have increased and

will continue to do so with additional growth. The future of farming and food security in San Juan County will depend upon the continued access to, and wise use of, water.

4.3.3 WELL INVENTORY

The County well inventory is quantified by the number of water well reports (well logs) on file. Well logs are available at H&CS or through the Department of Ecology website. Ecology has a record of approximately 5400 water well logs on file. All new wells must meet well site criteria to ensure that they are not impacted by potential sources of contamination.

4.4 GROUND AND SURFACE WATER PROTECTION

4.4.1 On-Site Sewage System permitting and Operation & Maintenance

Health and Community Services implements SJCC Chapter 8.16 On-Site Sewage System (OSS) Disposal to protect public health by minimizing exposure to untreated sewage. This includes inadequately treated discharges from OSS that can affect surface and ground water. Permitting requirements for on-site sewage systems include vertical separation to groundwater and horizontal separation to surface water adopted by reference from WAC 246-272A. In addition, H&CS administers an Operation and Maintenance program that exceeds the requirements outlined in WAC 246-272A by requiring ongoing O&M inspections county wide, increasing the frequency at which inspections are required for food service establishments, and requiring O&M upgrades to be installed at the time of property sale.

4.4.2 Seawater Intrusion

In 2007, the San Juan County Board of Health revised SJCC 8.06 to include a Seawater Intrusion Protection section. This ensures that projects that have a potential to cause or contribute to seawater intrusion are evaluated to determine their impacts on the groundwater resource prior to a project decision being made. If the project is determined to have an impact on groundwater, the Health Officer will approve with conditions designed to prevent degradation. Projects that cannot mitigate the impact of seawater intrusion on the groundwater resource may be modified or denied.

4.4.3 Water Monitoring

H&CS established groundwater quality monitoring networks in high priority areas of North Lopez and in Eastsound in 2008 utilizing grant funding. The network in Eastsound is managed and maintained by Eastsound Water Users Association (EWUA). The monitoring network on Lopez is monitored and maintained by H&CS staff at a low level with available staff and funding. The monitoring networks consist of data loggers installed in multiple wells, which gather static water level information. In addition, nitrate, chloride and conductivity parameters have been

analyzed periodically since 2008 to assess impacts from seawater intrusion and human related nitrate loading to the aquifers.

Individual wells are required to monitor for water quality and submit that information to H&CS in order to obtain water availability approval for a building permit. The water quality information is entered and stored in a database maintained by H&CS.

4.5 STORM AND SURFACE WATER MANAGEMENT

The County established a Stormwater Utility in 2008 to administer programs and projects to protect and improve water quality, water quantity management, and aquatic habitats. Storm water from impervious surfaces must be pre-treated and retained before discharge to natural surface waters (wetlands, streams, ponds). The County has incorporated by reference development design standards for storm water that follow the Department of Ecology's latest guidance. Watershed-scale system planning was completed in 2015 and is used, along with other technical and scientific information, to guide the Utility's Capital Improvement Program (CIP) for infrastructure upgrades to storm and surface waters. The projects are designed to retain fresh water on the landscape for groundwater recharge, manage excessive runoff, reduce bacteria and nutrient loading, and maintain cooler waters to buffer the impacts of climate change on water quality and cold water refugia.

The County's Salmon Recovery Program also leverages surface water management for habitat benefits to aquatic species. Additional recovery planning for salmonid and native freshwater fish is currently underway, and will guide habitat restoration measures in high priority watersheds.

The County's Utility works to ensure the storm and surface water system is adequately maintained and functional, in order to protect water quality, manage water quantity, and preserve aquatic habitats. Storm water runoff from impervious surfaces picks up contaminants that can impact our water quality if not properly treated. Protection and maintenance of the storm and surface water system also helps to reduce the risk of flooding of structures and roadways. Storm water infiltrates into groundwater, and drains to surface waters (streams, wetlands, ponds and their associated riparian areas) before entering the marine environment.

4.6 NATURAL RESOURCES

4.6.1 Fish, Wildlife and Native Habitat

The complex geology of the San Juan Islands support a diverse land cover that, in conjunction with our streams, wetlands and nearshore areas, supports a wide array of plants and animals. Our habitats are small, disconnected, and often rocky, and for many of them protection is either recommended or is required by State or Federal law.

A stated goal of previous planning efforts is to use Best Available Science to ensure there is no net loss of the functions and values of wetlands and fish and wildlife habitat, giving special consideration to anadromous (migratory) and native fish.

4.6.2 Marine Waters – San Juan County Marine Stewardship Area

The marine waters of San Juan County were designated a Marine Stewardship Area in 2004. The designation is designed to protect the unique and valuable marine resources of the islands, while allowing sustainable use to occur. A Marine Stewardship Area (MSA) Plan, completed by the Marine Resources Committee in 2007 and approved by County Council, assessed conditions and recommended strategies to protect and improve resource conditions. The work is consistent with some of the Shoreline Management Plan development standards currently in place.

The Marine Stewardship Area designation includes the Islands' uplands, shorelines and marine waters throughout the County. The quality of the marine waters are influenced by the freshwater runoff from the Islands as well as boating and vessel traffic, and activities of neighboring jurisdictions.

4.7 GOALS AND POLICIES

Goals

1. Protect and manage the quality and quantity of ground, surface, and marine waters by monitoring, preserving and enhancing hydrologic systems that provide for the beneficial use of water.

2. Establish coordinated, cost effective programs for monitoring water quality, water quantity and associated habitats and species so that changes can be identified and protection programs modified as necessary.

3. Work cooperatively with State & Federal agencies and coordinate protection and management of water resources and fish and wildlife habitat in the County.

4. Establish publicly supported methods of funding the actions in this Element.

5. Assign the policies included in this element to specific County department heads, who will establish a timeline and assign skilled staff to work on the development of the policies included in this Element.

6. Manage water resource in San Juan County by monitoring and measuring the amount of fresh water used and available from ground water and surface water sources.

7. Promote water conservation to ensure the availability of fresh water resources. Encourage low impact development practices such as rainwater catchment, onsite retention, and treatment of storm water.

8. Protect existing water users and water uses that are compliant with County Code and WA state policies (water rights, permits, county code)

9. Develop community outreach to educate the public of the requirements associated with their water use.

10. Insure new development has adequate water availability prior to permitting so as to limit impairment of existing users that include designated beneficial uses, and fish and wildlife habitat that rely on fresh water.

11. The Clean Water Utility will Coordinate water planning and protection efforts among County departments with authority over development, land use, drinking water, wastewater treatment, stormwater management, road construction and maintenance, solid waste management, and natural resource protection.

Policies

1. The Clean Water Utility will develop an Advisory Committee web presence that the committee can utilize and maintain. The site will provide current information on water resource issues, as well as adopted plans and data for use by the public and County Departments.

2. Develop and maintain a County-wide water budget that tracks water use from domestic, agriculture and industrial uses.

3. Review current Codes for seawater intrusion, new water source approval, Group B system oversight and support, available alternative water sources, and water resource data acquisition.

4. Fund, Create and Maintain the staff position of County Hydrogeologist to provide technical assistance to staff and property owners to protect ground and surface

water and associated fish and wildlife habitat. Position would also support long-term monitoring, data collection, and trend analysis to ensure protection of water resources.

5. Develop a plan to identify and protect property with particular value for impacting water quality, quantity and recharge, in keeping with Land Bank's mission.
6. Develop and fund programs to a) reduce the use of harmful chemicals including pesticides and petroleum based fertilizers; b) encourage safer use and disposal of chemicals; and c) enhance hazardous waste disposal opportunities.

7. Encourage the retention of healthy native soils, vegetation and forest cover. Encourage preservation and increased infiltration of fresh water.

8. Explore the safe, subsurface gray-water re-use or residential wastewater.

9. Ensure adequate treatment of domestic wastewater from new and existing development through the county's on-site sewage O&M program.

10. Collect and track annual water use data from the County's Group B water systems.

11. Develop a Water Use Efficiency program for the County's Group B water systems. This program will track water use efficiency and require water systems to have a plan to achieve and maintain water use efficiency as to more than 15% loss. The program will recognize systems with lowest water loss.

12. Require all new water uses to install a water meter that is capable of electronically reporting water use data to the County.

13. Create incentives for all existing water users to install a water meter that is capable of electronically reporting water use data to the County.

14. Require all water hauling permit holders to report volume of water trucked for potable water use by month to the County annually.

15. Conduct a minimum of 20 Group B water system sanitary survey's per year.

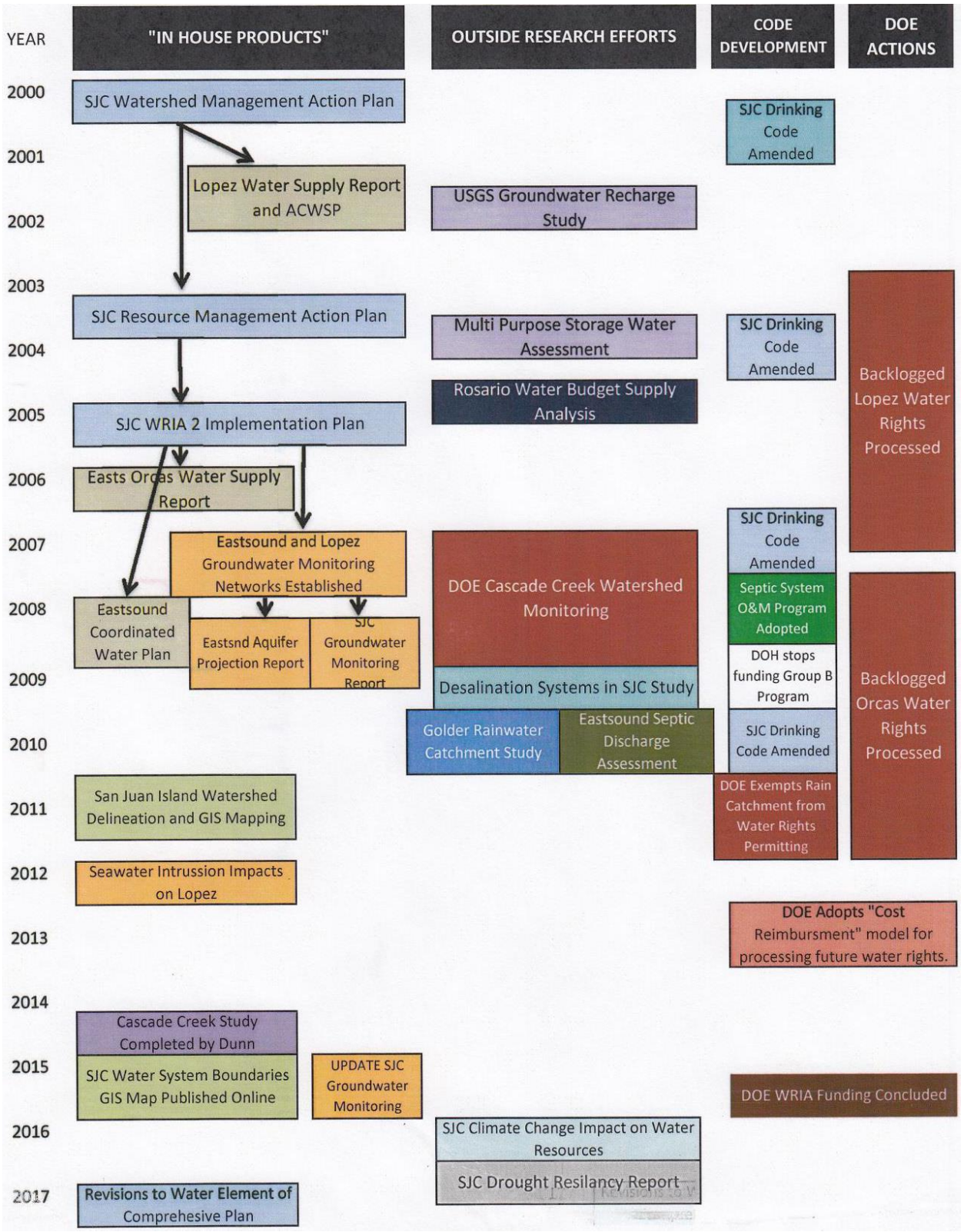
16. Maintain a cooperative relationship with the water systems that supply the

County's Urban Growth Area to insure that water system capacity is adequate to support anticipated growth.

17. Insure that County Code related to alternative water sources and water availability is consistently applied.

18. County facilities will develop a "water budget" as part of their annual work plan.

Appendix A – San Juan County Water Resource Planning Chronology 2000-2017


YEAR
"IN HOUSE PRODUCTS"
OUTSIDE RESEARCH EFFORTS
CODE DEVELOPMENT
DOE ACTIONS
2000
SJC Watershed Management Action Plan
2001
Lopez Water Supply Report and ACWSP
2002
USGS Groundwater Recharge Study
2003
SJC Resource Management Action Plan
2004
Multi Purpose Storage Water Assessment
2005
SJC WRIA 2 Implementation Plan
2006
Easts Orcas Water Supply Report
2007
Eastsound and Lopez Groundwater Monitoring Networks Established
2008
Eastsound Coordinated Water Plan
Eastsnd Aquifer Projection Report
SJC Groundwater Monitoring Report
2009
2010
2011
San Juan Island Watershed Delineation and GIS Mapping
2012
Seawater Intrussion Impacts on Lopez
2013
2014
Cascade Creek Study Completed by Dunn
2015
SJC Water System Boundaries GIS Map Published Online
UPDATE SJC Groundwater Monitoring
2016
SJC Climate Change Impact on Water Resources
2017
Revisions to Water Element of Comprehesive Plan
Rosario Water Budget Supply Analysis
DOE Cascade Creek Watershed Monitoring
Desalination Systems in SJC Study
Golder Rainwater Catchment Study
Eastsound Septic Discharge Assessment
SJC Drinking Code Amended
SJC Drinking Code Amended
SJC Drinking Code Amended
Septic System O&M Program Adopted
DOH stops funding Group B Program
SJC Drinking Code Amended
DOE Exempts Rain Catchment from Water Rights Permitting
Backlogged Lopez Water Rights Processed
Backlogged Orcas Water Rights Processed
DOE Adopts "Cost Reimbursment" model for processing future water rights.
DOE WRIA Funding Concluded
SJC Drought Resiliancy Report

Appendix B – Definitions

Definitions of Water Types (Define in entirely and regulations associated with them….)

Water Supply, Potable Water

Storm Water

Surface Waters

Marine Waters

Ground Water

Reclaimed Water

Reuse Water

Grey Water

Waste Water