

July 15, 2010

Ketchikan Public Utilities Drinking Water Regulatory Compliance UV Disinfection & Chloramination *Project Review & Update*

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KPU Water Treatment Project Overview

- Safe Drinking Water Act Regulation Requirements
- KPU UV and Chloramination Project Overview
- Regulatory Compliance Timeline Overview
- Public Information Overview

Safe Drinking Water Act Regulation

- Stage 1 Disinfectants and Disinfection By-Products Rule (DBP Rule)
 - Must meet THM and HAA by-product requirements by January 2004
- Stage 2 DBP Rule
 - Must meet more stringent THM and HAA by-product requirements by July 2014
- Long Term 2 Enhanced Surface Water Treatment Rule (LT2 Rule)
 - Must provide a second disinfectant for Cryptosporidium inactivation by Oct 1, 2014

ADEC Actions and KPU's Response

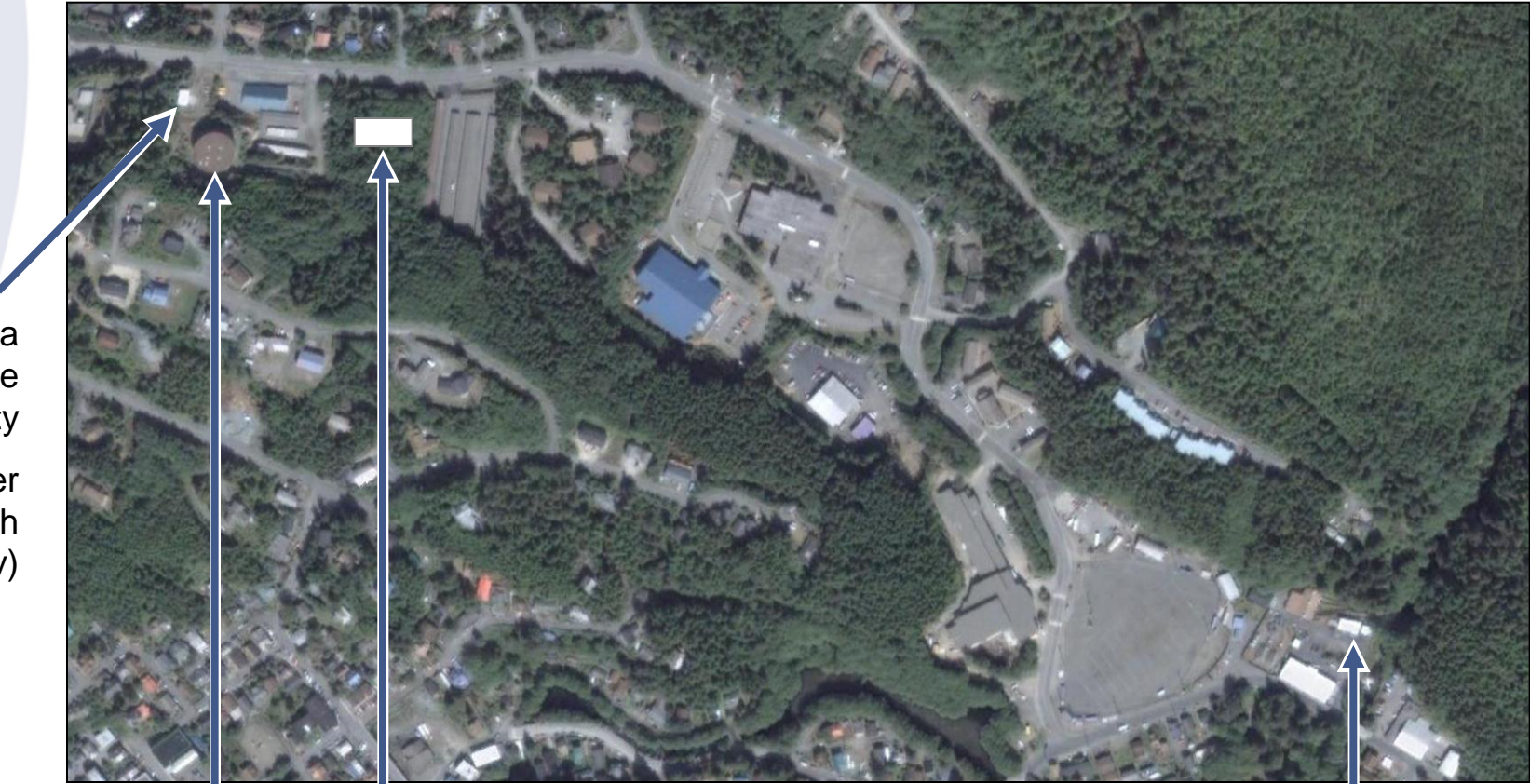
- ADEC notified KPU January 2005 of noncompliance with Stage 1 DBP Rule requirements
 - Due to high levels of Haloacetic Acids (HAA5)
- ADEC requires KPU to develop an approved means for Stage 1 DBP Rule compliance
- KPU retained CH2M HILL to develop the most feasible and economic means for DBP Rule and LT2 Rule compliance

New KPU Water Treatment Facility Design & Construction Up-date

- Water treatment facility's predesign work began in early 2006
- Water treatment facility's final design completed July 2008 and project was immediately bid for construction
- UV disinfection and chloramination facilities are now under construction and 90% + complete
- UV disinfection process expected to go online within next 2 weeks
- Ammonia feed expected within next 30 days

KPU Water Treatment Facility Locations

Ammonia
Storage
Facility
(Former
Soda Ash
Facility)

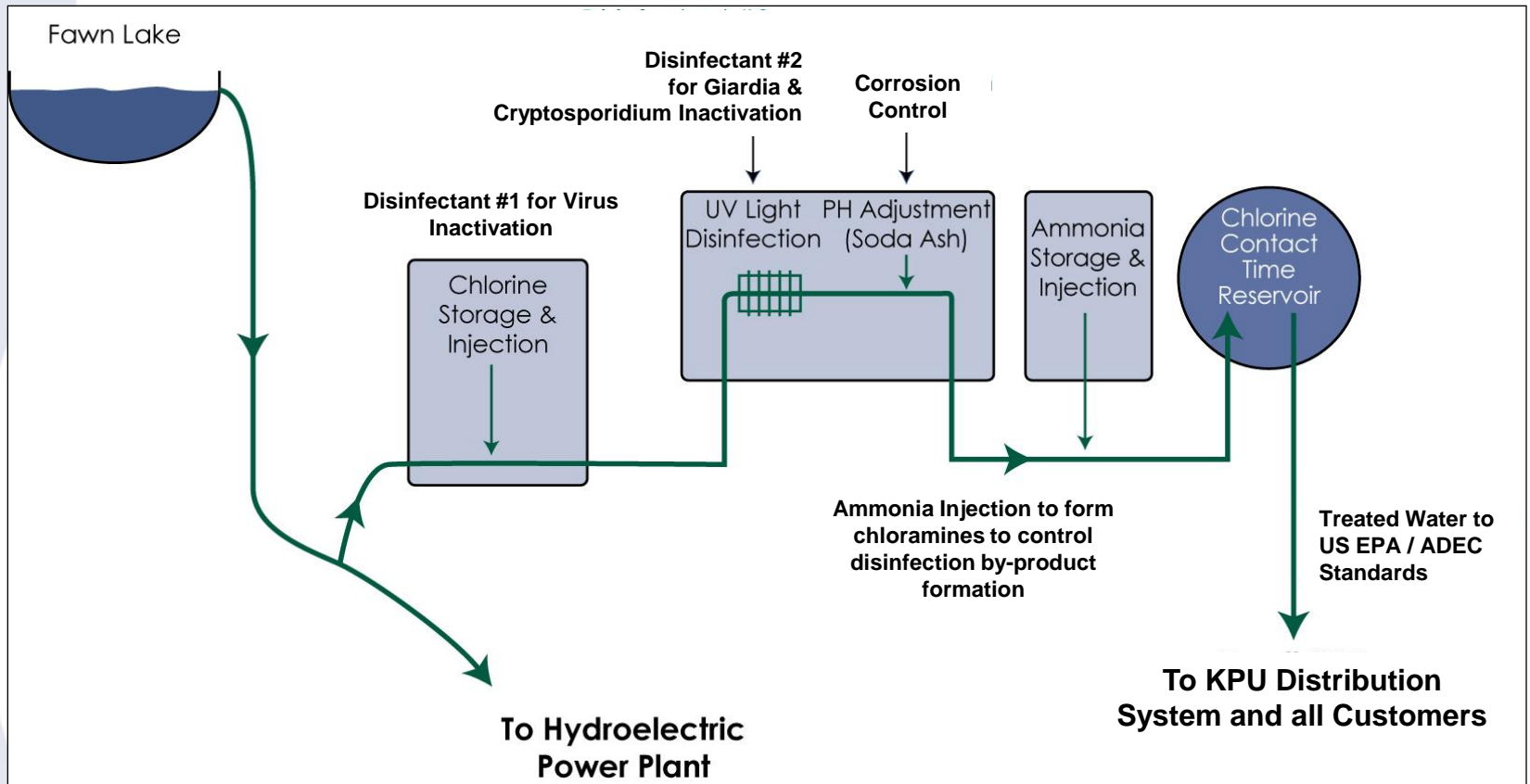


Bear Valley
CT Reservoir

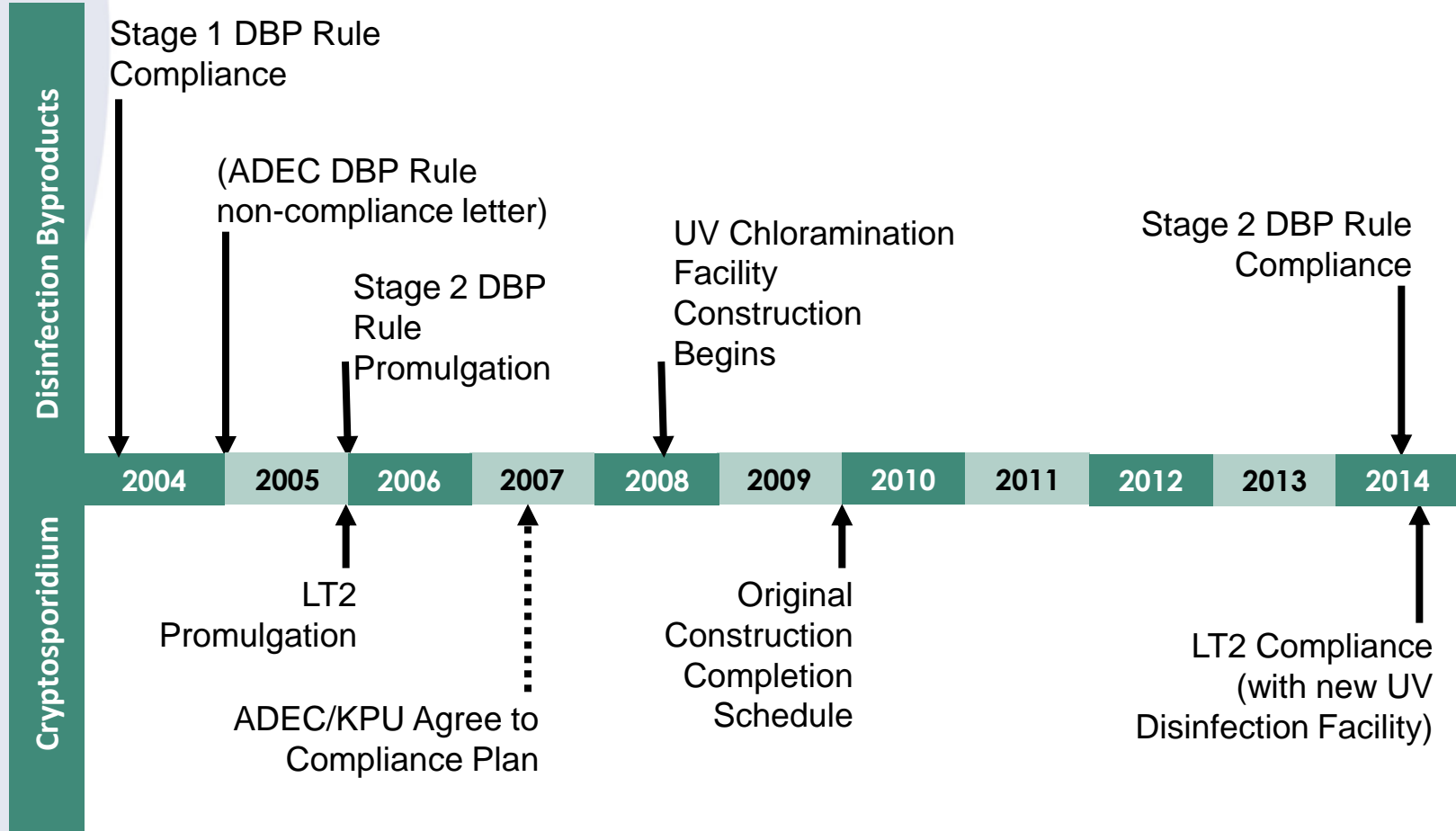
New UV Disinfection
& Soda Ash Facility

Chlorination Facility

KPU Water Treatment Process



Regulatory Compliance Timeline Review



Public Information Overview

- Why is drinking water disinfected?
- Chloramine Safety & General Information
- Sensitive User Groups
- Other Considerations
- Next Public Information Meeting

Why is drinking water disinfected?

Historical

- Prior to water supply disinfection, millions of people died from disease-causing microorganisms in the water supply
- Protect the public from disease-causing microorganisms
 - ▶ Kills bacteria, viruses and other organisms that cause serious illnesses and deaths
- Health benefits to the public by lowering rates of infectious diseases that spread through untreated water — standards upgraded over time

Advantages of Using Chloramine

- Chloramines form fewer disinfection by-products
- Chloramine residual is more stable and longer lasting, providing better protection against bacterial re-growth in systems

Does its job all the way through the water distribution system

- Chloramine does not tend to react with organic compounds, so many systems will experience fewer tastes and odor complaints when using chloramines

Is Chloraminated Water Safe? **YES**

- Chloramine has been used by water systems for almost 90 years
- Its use is closely regulated
- EPA 1998 Survey showed that more than 68 million people use water treated with chloramine
- EPA expects chloramine use to increase due to compliance with State 1 and Stage 2 Disinfection By-Product Rules for safer drinking water
- Chloraminated water that meets the EPA standard is safe

Is Chloraminated Water Safe? **YES**

- It is safer for people and animals to drink
- Safe to drink, cook with, bathe in
- Safe for plants and any other type of vegetation
- Safe for animals

Sensitive User Groups & Considerations

- Kidney dialysis patients
- Aquarium and terrarium — owners and suppliers
 - Fish, amphibians and reptiles
- Other considerations

Kidney Dialysis Patients

Home treatment equipment

Ketchikan

- One patient in Ketchikan
- Home dialysis training organization for Alaska is located in Anchorage — Fresenius Medical Care
- Dialysis centers connect patients with home care training center in each state or region
- Standard processes — Dialysis organizations provide assessments of patient equipment needs
- Water information about KPU will be kept on file

Kidney Dialysis Patients

- Chloramine is safe for dialysis patients to drink, and cook with and to bathe in, and other general use
- Like chlorine, chloramine can harm kidney dialysis patients during the dialysis process if it is not removed from water before entering the bloodstream
- During dialysis process, water comes in contact with the blood across a permeable membrane and must be pretreated to remove chlorine and ammonia
- Solution is changing the dialysis equipment filter type

Aquarium and Terrarium Owners

How are fish, amphibians & reptiles affected?

- Chloraminated water passes through gills, directly entering the fish, amphibian and reptile bloodstream—therefore is toxic
- Chloramine must be removed as it binds to iron in red blood cell hemoglobin, causing reduced cell capacity to carry oxygen

Like chlorine, chloramine needs to be removed from water for fish, amphibian, and reptile use

Aquarium and Terrarium Owners

Options (available at pet supply stores)

1. Treatment products (drops or tablets) that remove both ammonia and chlorine, or
2. Biological filter (for ammonia) and chemical agent (for chlorine)

Cruise Ships

Cruise Ships not adversely affected

- With cruise ship industry standard treatment methods, ships should not require changes if operating per industry standards
- Current standards require a ship's system to have an online analyzer that automatically controls the free chlorine injection system
- The system detects chlorine levels and adjusts
- This adjustment ensures that the required free chlorine residual is provided when chloraminated water is used
- Converted back to free chlorine

Other considerations

- Rubber plumbing parts may disintegrate over a period of time, requiring replacement
- Beverage manufacturers and labs are examples of special considerations
 - ▶ Review current operations and take steps to ensure their water is treated appropriately for use

Thank you

Public Information Meeting & Open House

July 21, 2010

At the Ted Ferry Center

6:30 to 8:00 p.m.