

Ocean Shores 2017

Northwest Aquatic Eco-Systems

An aerial photograph showing a residential neighborhood with a large, winding waterway. The waterway is surrounded by dense green trees and houses. In the background, a large body of water, likely the ocean, is visible under a clear blue sky. The water in the foreground has a white, foamy appearance, possibly from a fountain or aeration system.

Douglas Dorling

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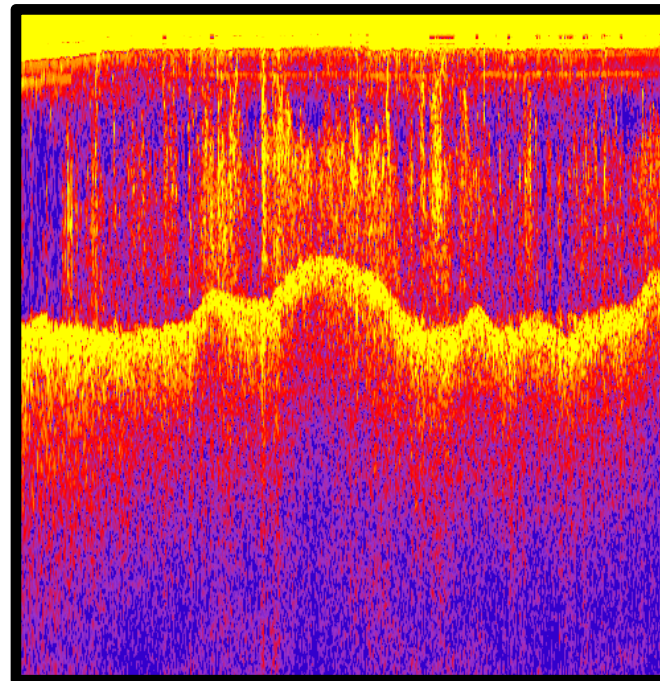
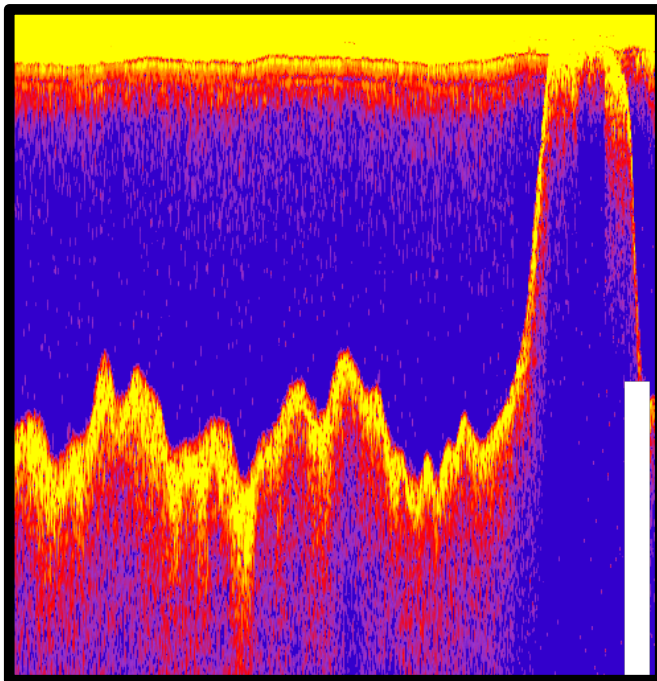
(360) 359-2225

Timeline Milestones

An aerial photograph showing a large, winding waterway, likely a canal or river, flowing through a residential area. The water is a mix of blue and green, suggesting varying depths or water quality. The surrounding land is densely packed with houses and trees. In the background, a large, open body of water, possibly a bay or lake, is visible under a clear blue sky.

- Fluridone 2007-2008
- 2009 & 2010 Grass Carp
- 2011 Canal Treatment
- 2011 Survey
- 2014 Survey
- 2015 Treatment
- 2016 Treatment
- 2017 Treatment

Survey Technology





Duck Lake

6/16/2017

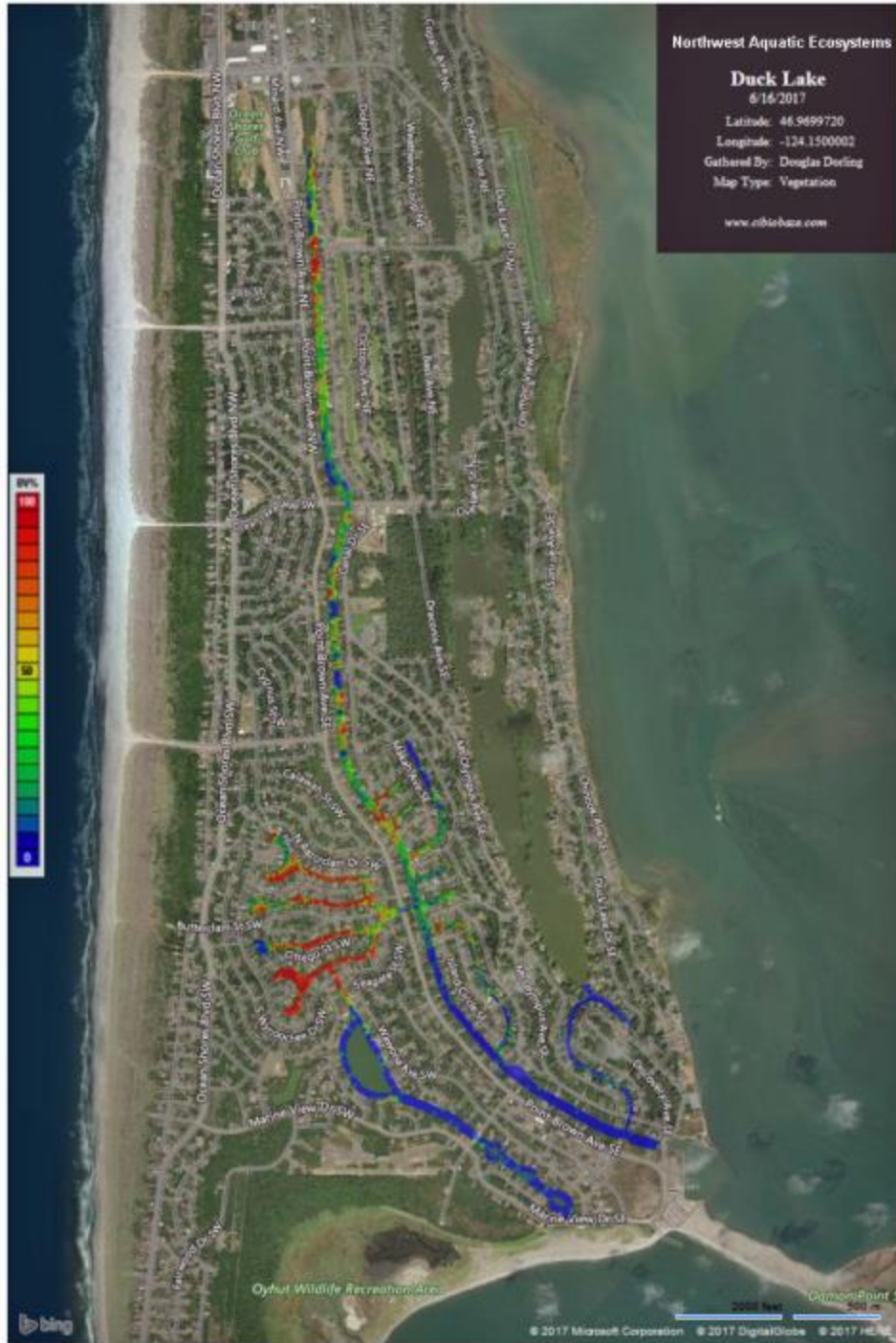
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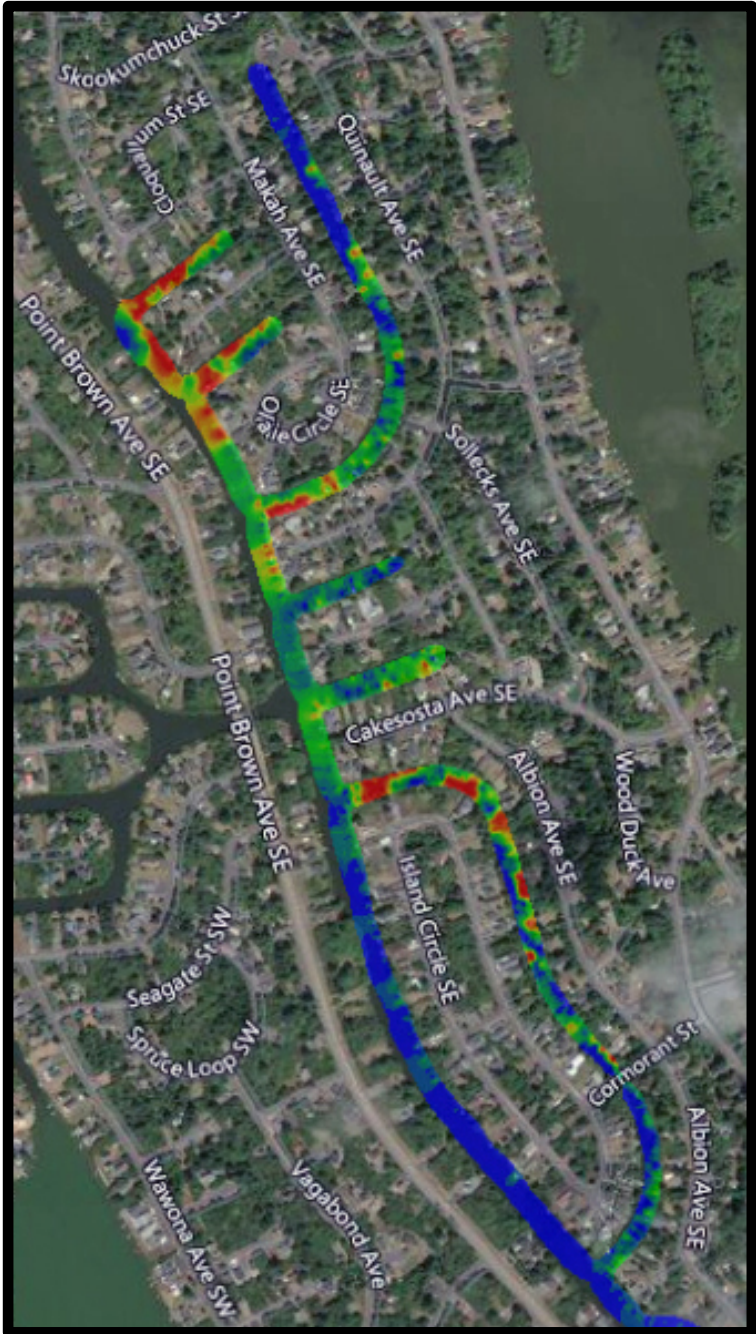
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Gathered By: Douglas Doring

Map Type: Vegetation

www.eitbase.com







CITY OF OCEAN SHORES
WASHINGTON

**Fresh Waterway Canal
Names**

- Heacocks Hollow
- Karoo's Kanal
- Oreja's Agua
- Party Pup Passage
- Starrynight Passage
- Marr's Shallows
- Oyhut Canal
- Friendship Passage
- Blue Heron Bayou
- Twaunnie's Dream
- Raccoon Lagoon
- Otter Alley
- Ballou Bayou
- Grow Old Along With Me Passage
- Bridges Bayou
- Ocean Wins
- Emily & Hana B. Waterway
- Wm C Marr Fishhook

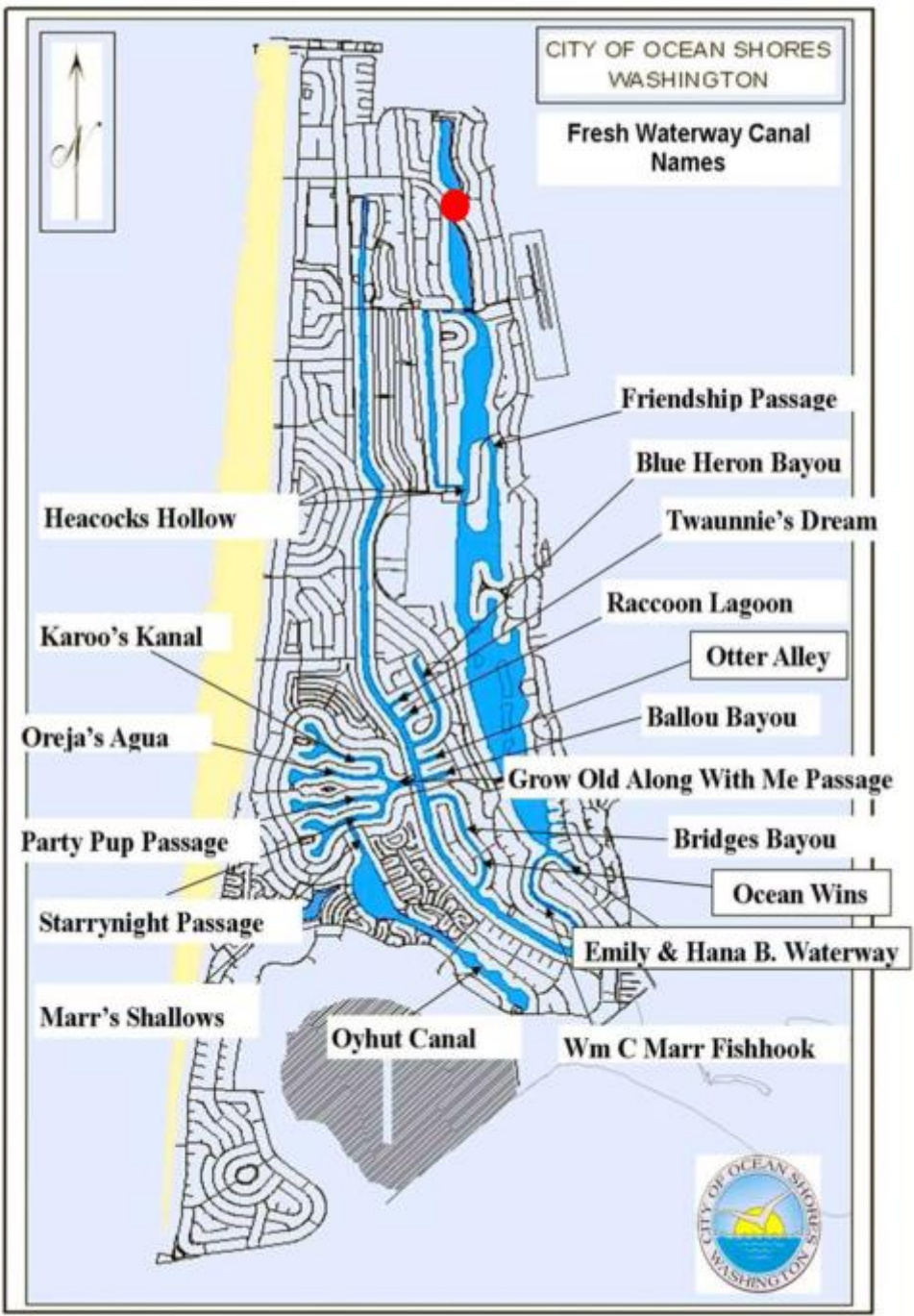














Parrotfeather

- **Class B noxious species**
- **Asexual reproduction**
- **Rhizomes**
- **Waxy surfaces**
- **Designated for control in areas where species is not widespread**



**Pennywort
Fishhook Canal**

Diquat Dibromide

1. There are no restrictions for recreational activities (swimming or fishing).
2. The restrictions for portable water (drinking) do not exceed 3 days.
3. Non-food crop irrigation (e.g. turf, ornamentals, etc.) has a maximum of 3 days.
4. Livestock consumption has a maximum of 1 day.
5. Food crop irrigation has a maximum of 5 days.

Water Use Restrictions Following Applications With Reward Landscape And Aquatic Herbicide (Days)

Application Rate	Drinking	Fishing and Swimming	Livestock Consumption	Spray Tank Applications** and Irrigation to Turf and Ornamentals	Spray Tank Applications** and Irrigation to Food Crops
2 gals./surface acre	3 days	0	1 day	3 days	5 days
1 gal./surface acre	2 days	0	1 day	2 days	5 days
0.75 gal./surface acre	2 days	0	1 day	2 days	5 days
0.50 gal./surface acre	1 day	0	1 day	1 day	5 days
Spot Spray* (< 0.5 gal./surface acre)	1 day	0	1 day	1 day	5 days

- Rapid dissipation of water systems.
- Loss of biological activity on contact with sediment.
- Lack of movement from vicinity of application once absorbed.
- Because of its persistence and very high affinity for the soil, diquat does not leach into groundwater.
- Bass and Bluegills are not affected at treatment application rates. Field studies to date have not identified significant short or long-term impacts on fish and other aquatic organisms in lakes or ponds.
- The bioconcentration factors measured for diquat in fish tissues is low. Therefore, bioconcentration is not a concern.

How Toxic is Diquat?

** Toxicities are measured using the LD50, which is the dose of active ingredient required to kill 50% of test animals. The lower the LD50 the more toxic.

Substance	Oral LD50 (mg/kg)	Use	Notes
Cyanide	1	Rodenticide	
Strychnine	2	Rodenticide	
Nicotine	1-50		
Parathion	6-50	Insecticide	
Verapamil	108	Blood pressure Ca ²⁺ channel blocker Tx of Supraventricular Tachycardia	1 tablet = 120mg. 108mg x 70kg person = 63 tablets 10kg child = 7 tablets
Paraquat	58-150	Herbicide	
Chlorine	150-200	0.5-1.5ppm used in swimming pools.	Intense irritation to humans at 5ppm
Warfarin	185	Rodenticide	
Caffeine	192-355		
Diquat cation	214-420	Herbicide at 1ppm for weed control	Reglone = 20% diquat dibromide diquat dibromide = 54% cation (Toxicity of product = x 10 lower) Safe for skin contact at 30ppm
Asprin	350-1000	Pain killer	1 tablet = 300-500mg. 350 x 10kg child = 12 tablets
Salt	3000	Food additive	3000 x 70kg = 210 gms 70kg person = 1 cup (210gms) 10kg child = 3 Tbsns (30gms)

How Toxic is Diquat?

- Chronic Toxicity studies (long term exposure) on sheep & calves given diquat treated water at **20ppm** (20x the rate used to kill aquatic weeds) as their only source of water for 8 months showed no toxic symptoms.
- Furthermore, farm animals were fed diets containing **100ppm** (100x the rate used to kill aquatic weeds) for 1 month & showed no significant diquat residues in meat or milk.

How Toxic is Diquat?

- Chronic toxicity studies on dogs & mice typically show the NOAEL (NO Adverse Observable Effect Level – which is the smallest amount of active ingredient ever found to have any form of measurable effect) to be between 0.5 & 4.5 mg/kg/day, but the most conservative mammalian test results recorded are considered to be 0.22mg/kg/day.
 - This would be like a 70kg (154lbs) consuming 25 liters of diquat treated water immediately after treatment.
- Then using 1% of the NOAEL (NO Adverse Observable Effect Level) rate which is used as a “safe” exposure level for humans because they assume that humans could be 10x more sensitive to pesticides than any sensitive test animal.
 - Therefore, any human (including child) could safely drink 250 mls/day of diquat treated water immediately after application every day FOR LIFE.

- Pro-Active vs. Reactive

- Long Term Budget

- Spring Survey

- Communication

- Continued Involvement of Local “Players”



Early Treatment Advantages

1. Less Biomass
2. More Efficient Herbicide Placement
3. Better Site Access
4. Drift Control



2017 and Beyond

- Establishment of long term yearly budgets
- Continued use of residential comments
- Continue the important working relationships that have developed between all stakeholders





America's Most Wanted

