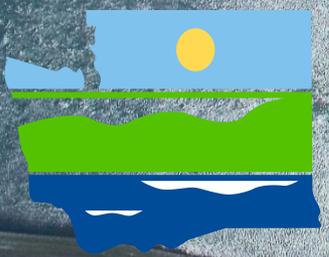


# Pollution Identification and Correction (PIC)

Dungeness River Management Team  
October 14, 2020



By: Heather Watts, MPH, CHES



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

# Not enough was being done to protect shellfish beds



# History of the Dungeness

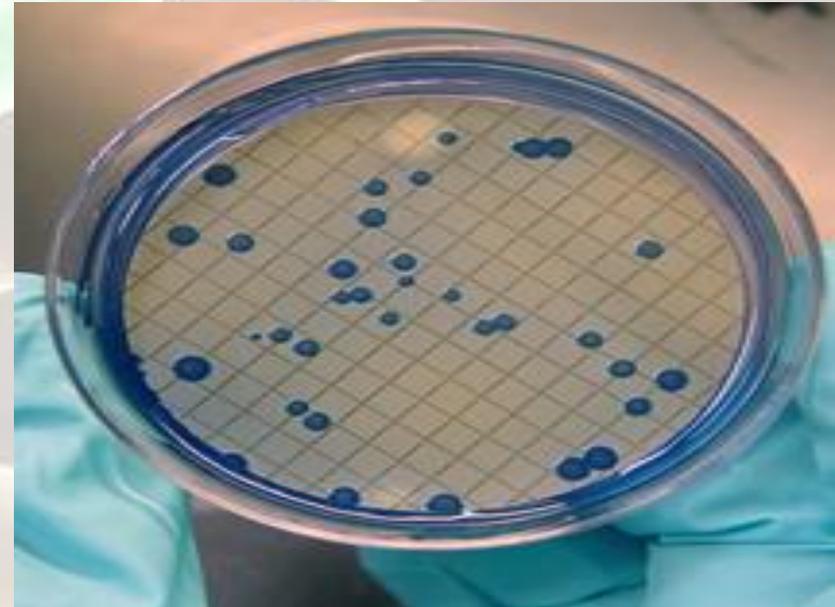
Month	Year	Growing Area	Acres Updgraded	Acres Downgraded	From	To
January	2000	Dungeness Bay	0	-300	Approved	Prohibited
May	2001	Dungeness Bay	0	-100	Approved	Prohibited
September	2003	Dungeness Bay	0	-227	Approved	Prohibited
September	2003	Dungeness Bay	92	0	Prohibited	Conditional
September	2003	Dungeness Bay	0	-1062	Approved	Conditional

**1,689 acres downgraded in 3 years!**

(2020 shows us we need to look on the bright side, so yay for the 92 upgraded acres!)

# Primary Water Quality Parameter

- Fecal coliform
  - Used as indicators of possible contamination
    - Indicates presence of pathogens (i.e. bacteria, viruses, protozoans) that also live in human/animal digestive tracts



# Who cares?

(We do!)

- People and pets get sick from eating polluted shellfish or wading /swimming in polluted waters.
  - Contact with contaminated waters can result in gastroenteritis, skin rashes, upper respiratory infections, and other illnesses.
- Children and the elderly are especially vulnerable.
- Economic impacts—tourism dollars, shellfish dollars.

# History of the Dungeness

Month	Year	Growing Area	Acres Updgraded	Acres Downgraded	From	To
January	2000	Dungeness Bay	0	-300	Approved	Prohibited
May	2001	Dungeness Bay	0	-100	Approved	Prohibited
September	2003	Dungeness Bay	0	-227	Approved	Prohibited
September	2003	Dungeness Bay	92	0	Prohibited	Conditional
September	2003	Dungeness Bay	0	-1062	Approved	Conditional

**1,689 acres downgraded in 3 years!**

(2020 shows us we need to look on the bright side, so yay for the 92 upgraded acres!)

**Microbial Source  
Dungeness Water**

DL Woodruff  
NK Sather  
VI Cullinan  
SLSargeant

Battelle  
Pacific Northwest Division  
Richland, Washington 99352

Prepared for  
Jamestown S'Klallam Tribe  
in fulfillment of Task 1 (Microbial Source  
of the Dungeness River Watershed  
for the EPA Targeted Watershed Grant  
and a Washington State Department

**FINAL PROJECT REPORT**

**FOR**

**G1400458**

**Strait Water Quality Partnerships**

**Clallam County Environmental Health**

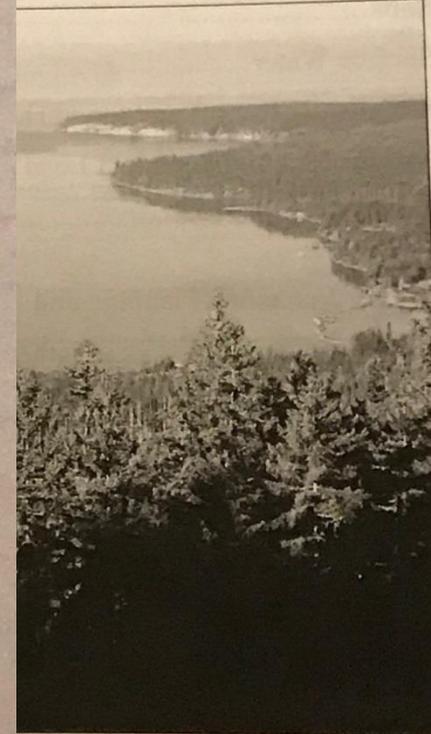
**Total Cost of Project: \$101,765**

**Grant or Loan Amount: \$76,324**

**Project Start Date: January 1, 2014**

**End Date: December 31, 2017**

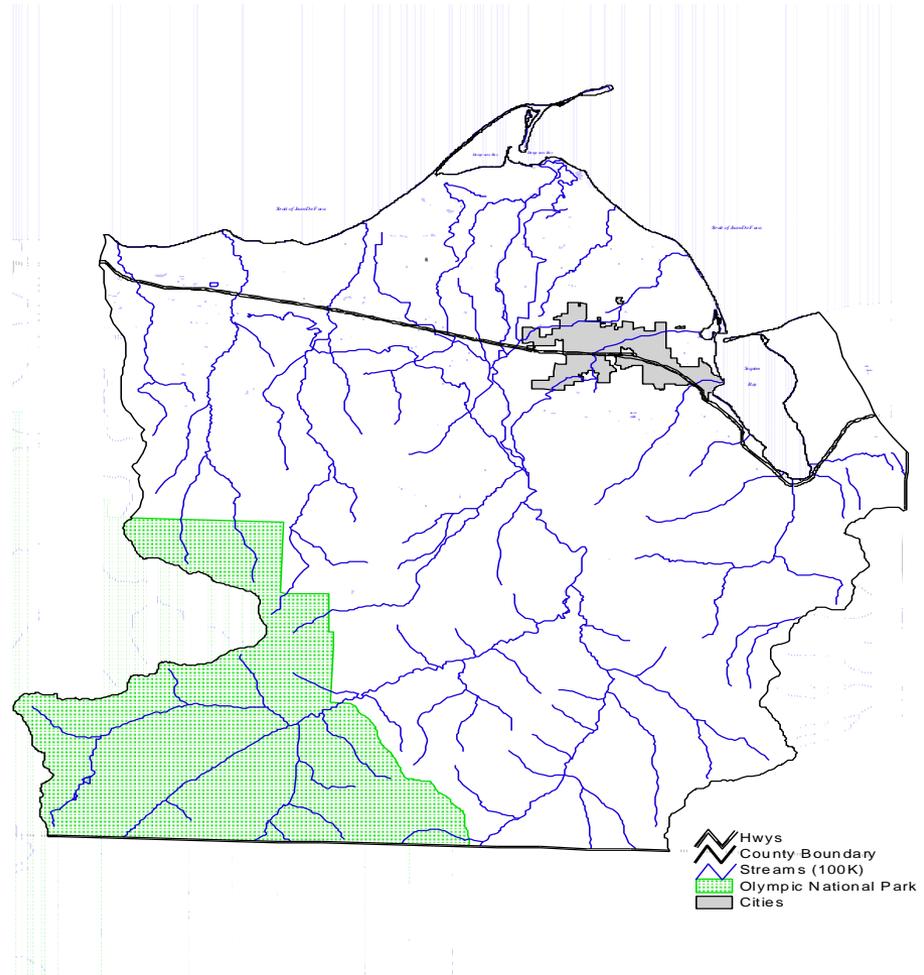
**Waters of Sequim Bay**  
*Compliance with  
Water Act*

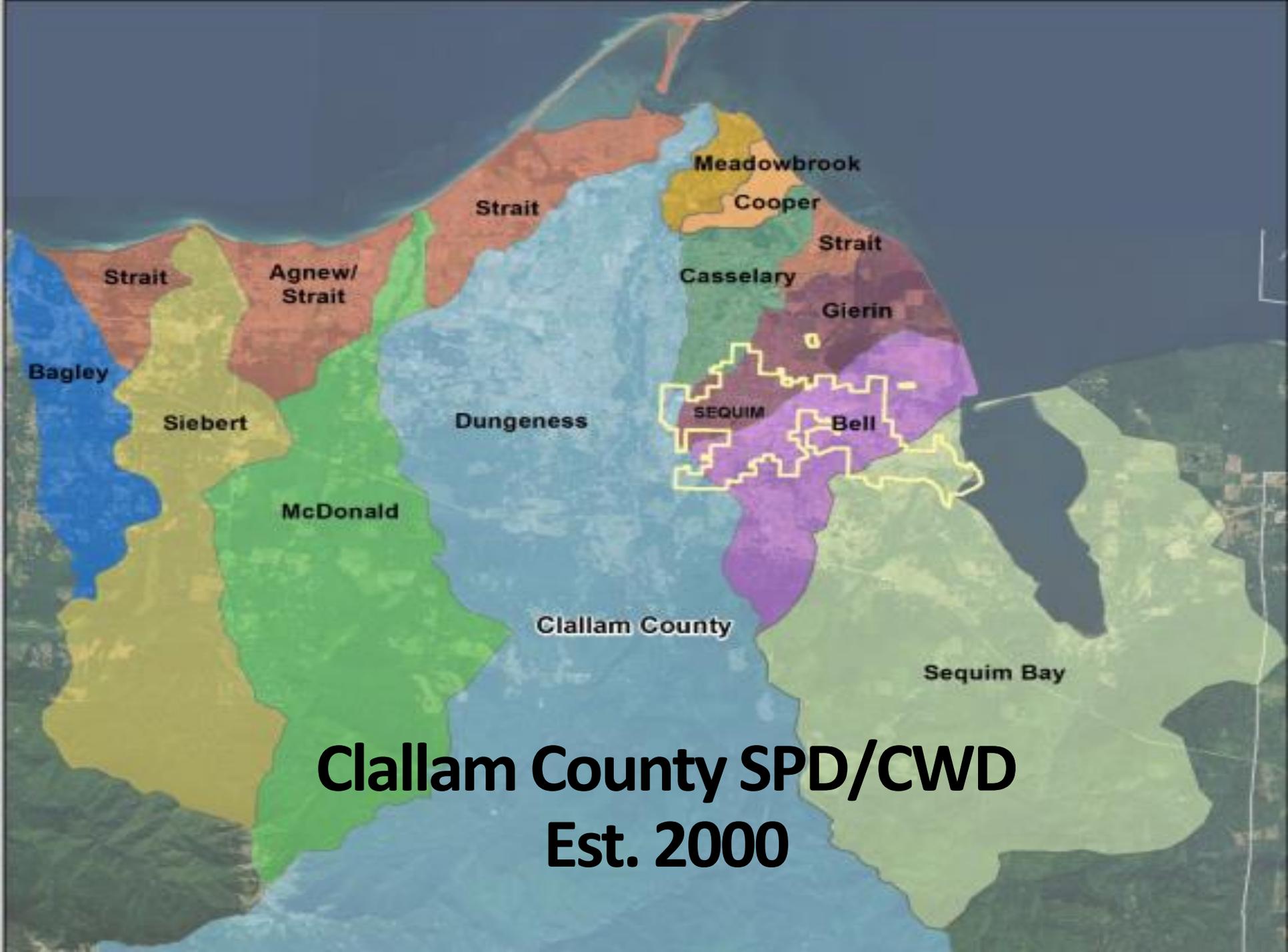


**Tribe**

# RCW 90.72

- Requires Shellfish Protection Districts (SPD) be formed within 180 days of commercial shellfish growing area downgrades and closures





**Clallam County SPD/CWD  
Est. 2000**

# RCW 70.118A

- Create Marine Recovery Area (MRA) where OSS may contribute to certain environmental problems:



- *Shellfish growing areas that are threatened or downgraded*
- *Areas where bacteria or nitrogen affect water quality*

# 2005 OSS State Code WAC 246-272A-0270

- Requires that homeowners properly maintain and inspect their OSS
  - Gravity OSS: every 3 years
  - Alternative systems: annually

*Inspection requirements took effect July 1, 2007.*

# History of the Dungeness ... the flip side

Month	Year	Growing Area	Acres Updgraded	Acres Downgraded	From	To
January	2000	Dungeness Bay	0	-300	Approved	Prohibited
May	2001	Dungeness Bay	0	-100	Approved	Prohibited
September	2003	Dungeness Bay	0	-227	Approved	Prohibited
September	2003	Dungeness Bay	92	0	Prohibited	Conditional
September	2003	Dungeness Bay	0	-1062	Approved	Conditional
April	2011	Dungeness Bay	424	0	Prohibited	Conditional
October	2015	Dungeness Bay	688	0	Conditional	Approved
October	2015	Dungeness Bay	40	0	Prohibited	conditional
October	2016	Dungeness Bay	272	0	Conditional	Approved

# History of Dungeness Bay Shellfish Growing Area Classifications



Conditionally Approved areas are open for harvest from February through October each year.



Meadowbrook Slough

Dungeness River

2015 PIC Pilot  
Project Area

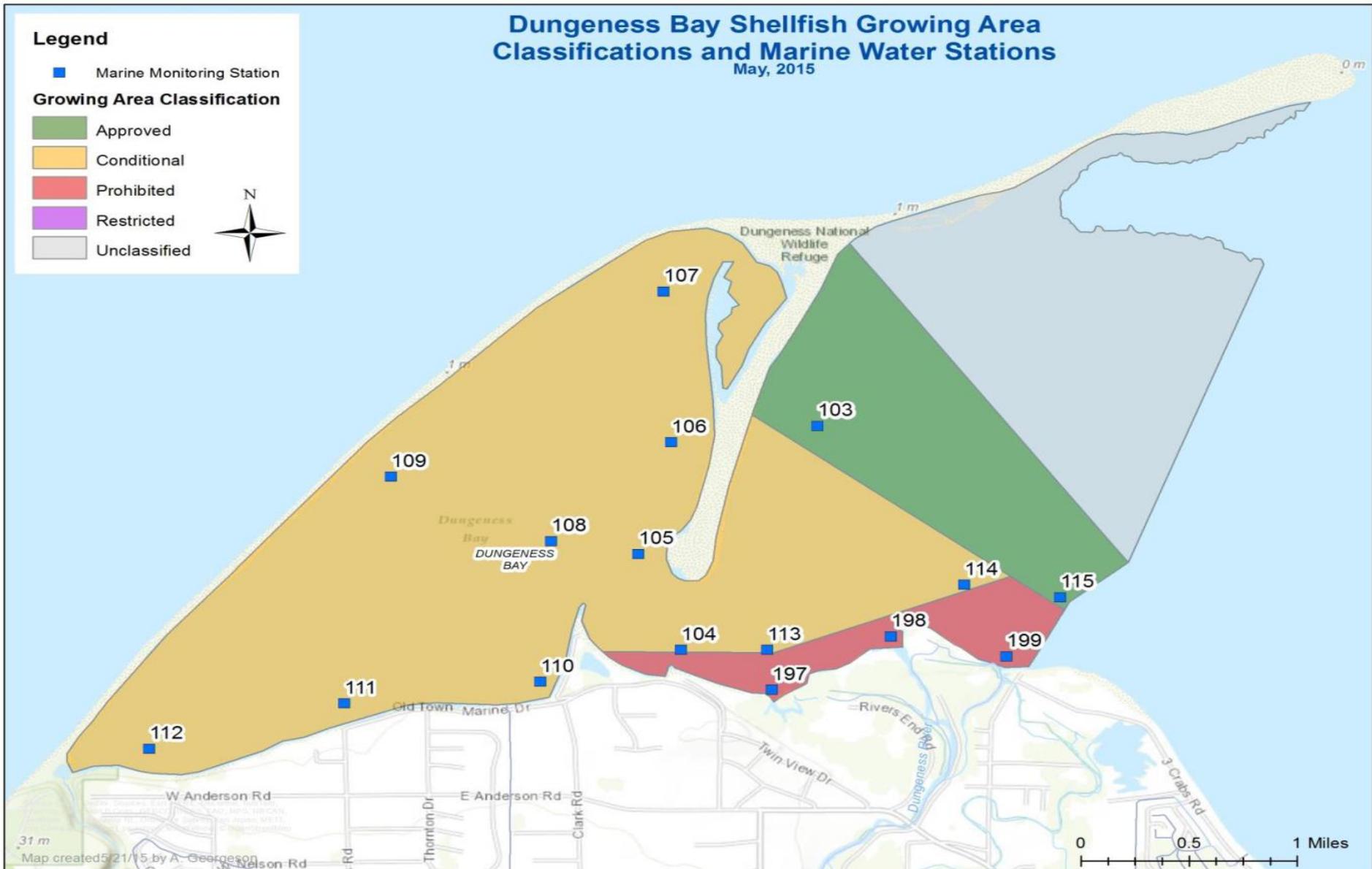
Golden Sands Slough

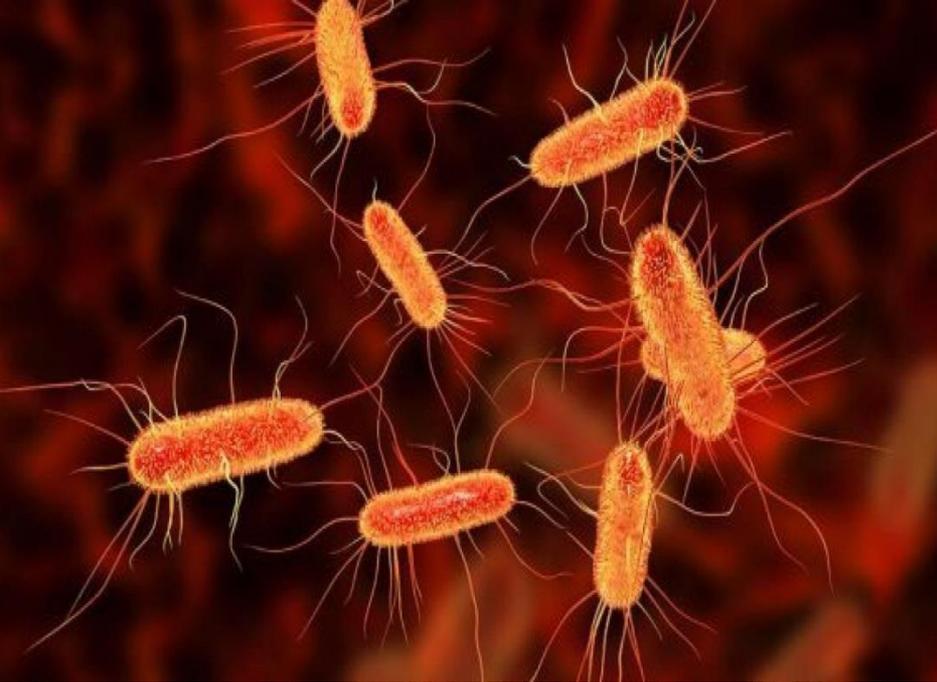
Meadowbrook Creek

Cooper Creek

**PIC Pilot:**  
“Planning  
and design”  
phase

# Prior to Upgrade



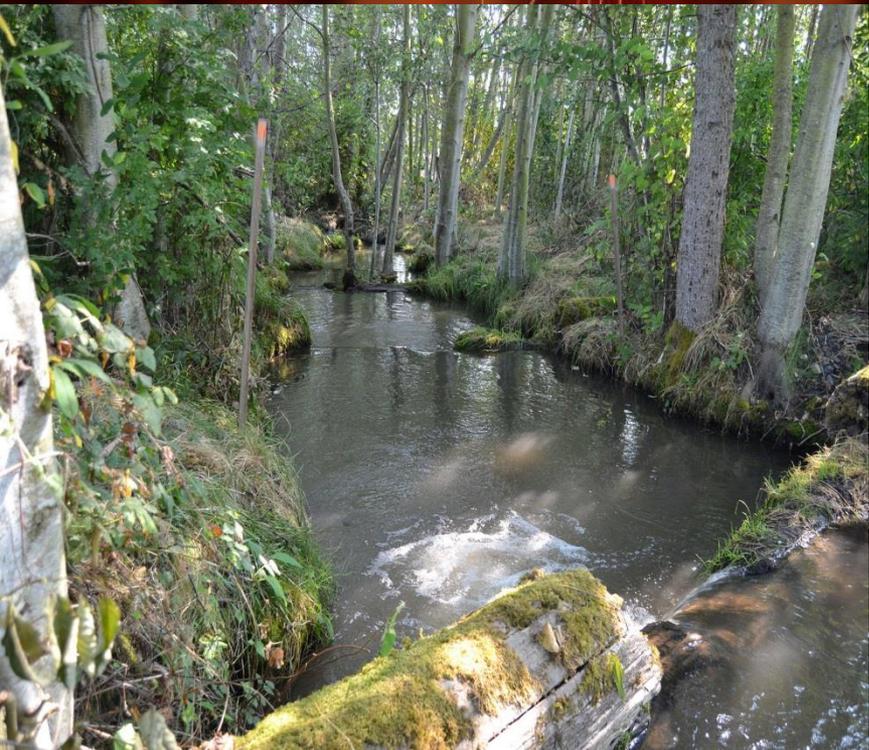
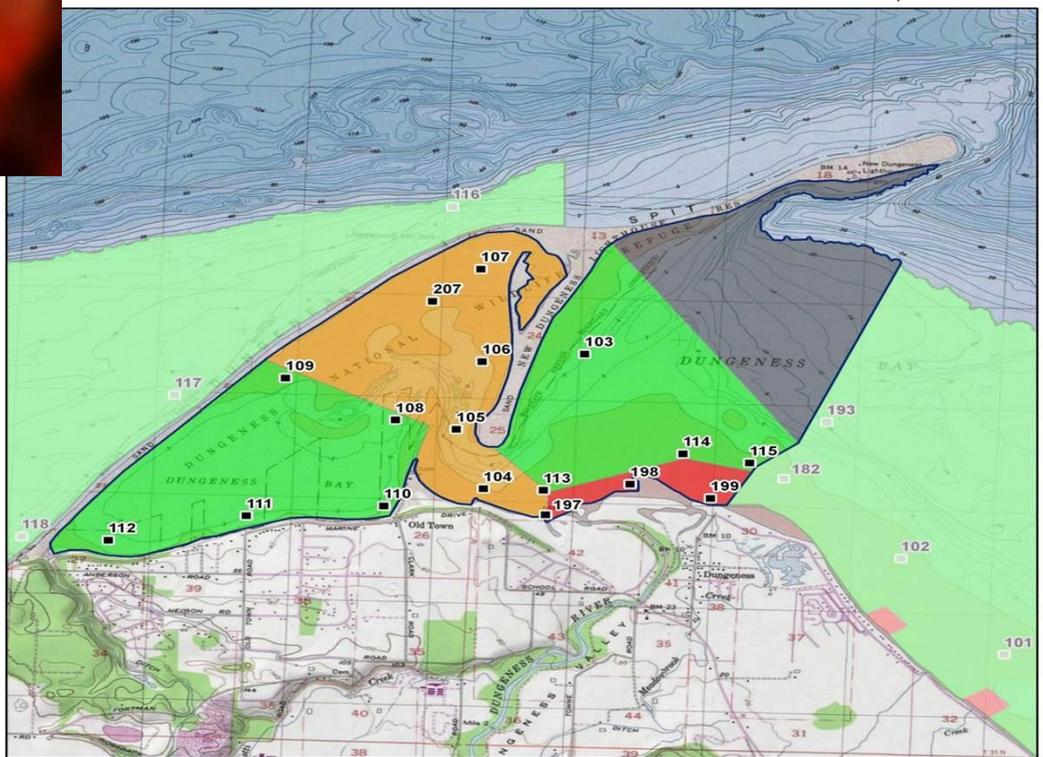


# Goals of PIC

Dungeness Bay

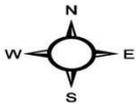


Washington State Department of Health  
 Date Updated: 7/11/2018

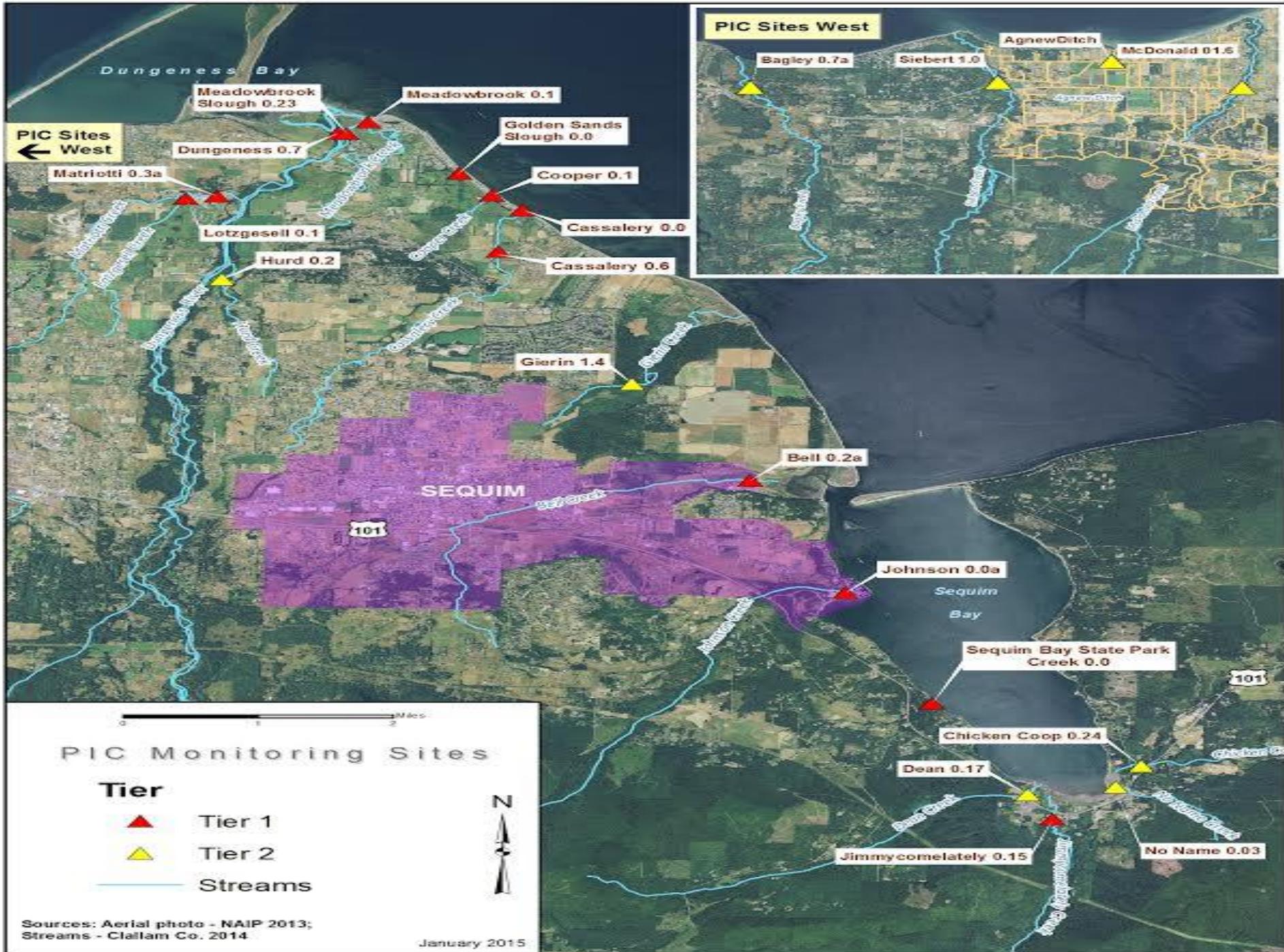


- Classification**
- Approved
  - Conditional
  - Prohibited
  - Restricted
  - Unclassified

**Sampling Stations**



\* Some sampling stations are highlighted with grey box for ease of reading.



# Very dedicated and talented group of Streamkeepers Volunteers



# PIC Process

1. Select focus area
2. Segmented sampling
3. Parcel office research
4. Prioritize parcels
5. Parcel Sanitary Surveys
6. Assist in corrective actions/provide TA
7. Enforcement actions if necessary
8. Follow-up sampling
9. Share results



Upper Matriotti/Lower Bell

Lower Matriotti/Lotzgesell

Meadowbrook/Golden Sands

Sequim

Upper Matriotti/Lower Bell

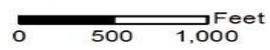


Meadowbrook Slough Focus Area

Meadowbrook Creek Focus Area

Golden Sands Focus Area

Cooper Creek Focus Area



### PIC Pilot Project Area

 PIC Focus Areas

 Property parcel lines



# PIC Focus Area

Meadowbrook Slough

Golden Sands Slough

Meadowbrook Creek

Sequim

# PIC Process

1. Select focus area
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Upper Matriotti/Lower Bell

Lower Matriotti/Lotzgesell

Meadowbrook/Golden Sands

Sequim

Upper Matriotti/Lower Bell

# Segmented Sampling

- June 2015 Golden Sands was identified as a “hotspot” due to high FC and visible sewage plume



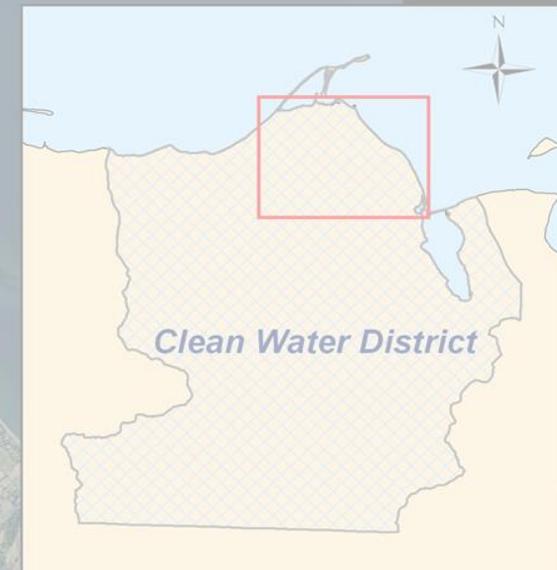
June 29, 2015 plume event

Avg. fecal results during  
plume event = 1270  
FC/100ml\*

Subsequent dye testing  
of 8 properties directly  
were inconclusive due to  
background interference

# PIC Process

1. Select focus area
2. Segmented sampling
3. Parcel office research
4. Prioritize parcels
5. Parcel Sanitary Surveys
6. Assist in corrective actions/provide TA
7. Enforcement actions if necessary
8. Follow-up sampling
9. Share results



Upper Matriotti/Lower Bell

Lower Matriotti/Lotzgesell

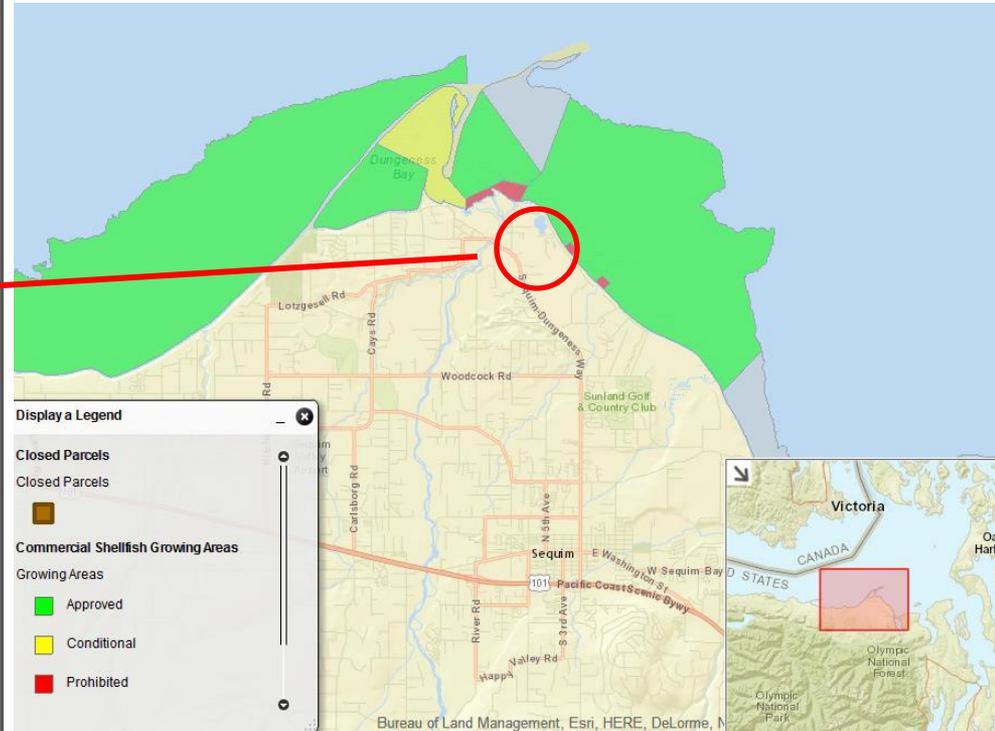
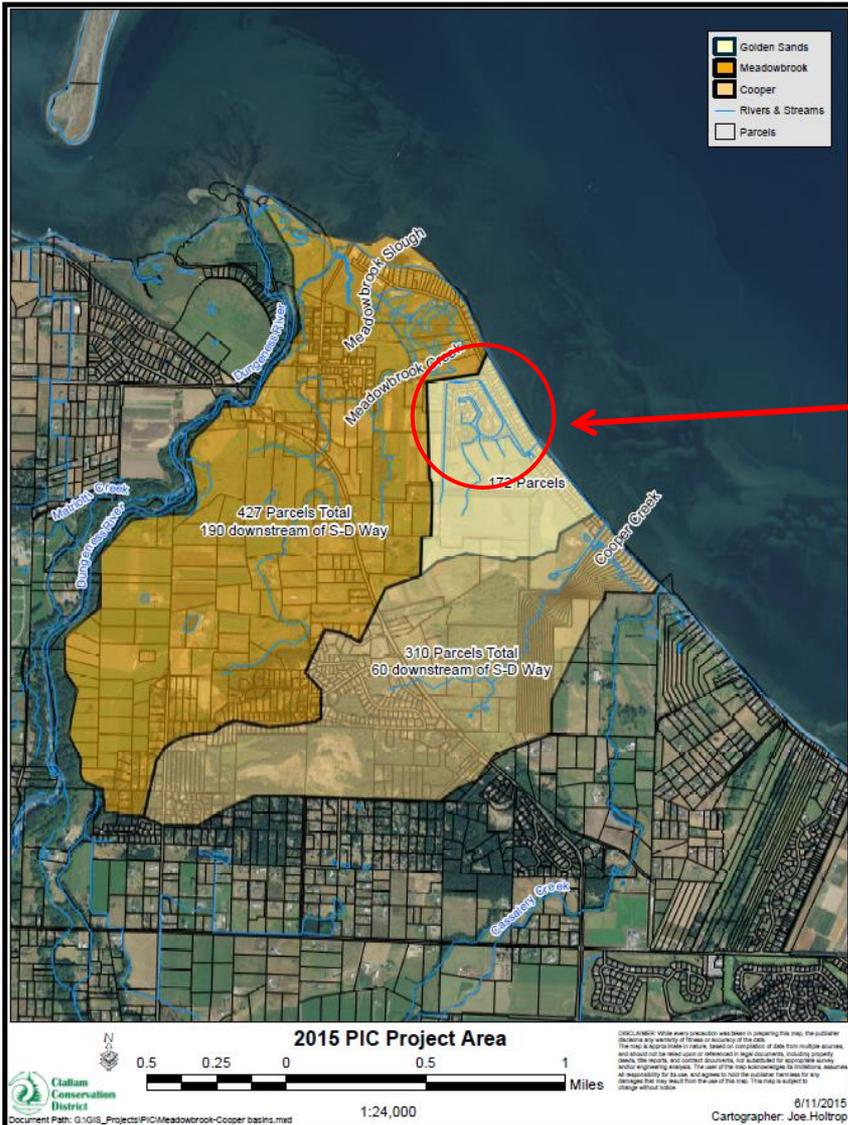
Meadowbrook/Golden Sands

Sequim

Upper Matriotti/Lower Bell



# Prioritizing Parcels



# Fecal Results: 6/29/15 – 10/26/16

All sample results reported as fecal colonies/100ml

**(G)** = Lab qualifier – “Value is likely greater than the reported result. Reported result may be biased low”

n = sample set

Range: 26 – 1328  
n = 5

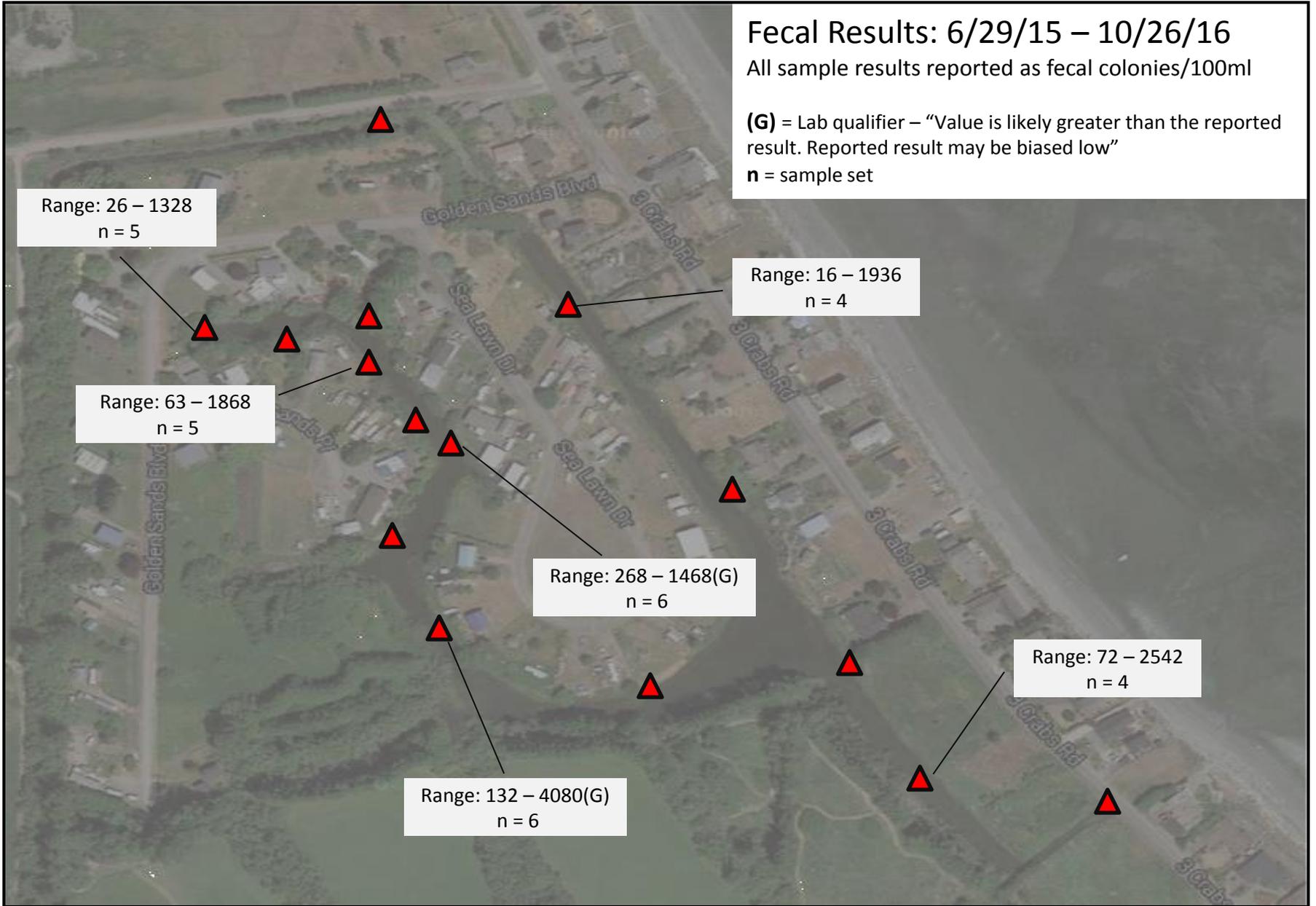
Range: 16 – 1936  
n = 4

Range: 63 – 1868  
n = 5

Range: 268 – 1468(G)  
n = 6

Range: 72 – 2542  
n = 4

Range: 132 – 4080(G)  
n = 6



# Golden Sands Discoveries ...

- 23 Parcels directly adjacent to the slough surveyed from 9/15/16 to 12/20/16
- 11 total non-conforming systems found
- 9 have been corrected, still chasing down 2 ...

# PIC Process

1. Select focus area
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Upper Matriotti/Lower Bell

Lower Matriotti/Lotzgesell

Meadowbrook/Golden Sands

Sequim

Upper Matriotti/Lower Bell

# Technical Assistance

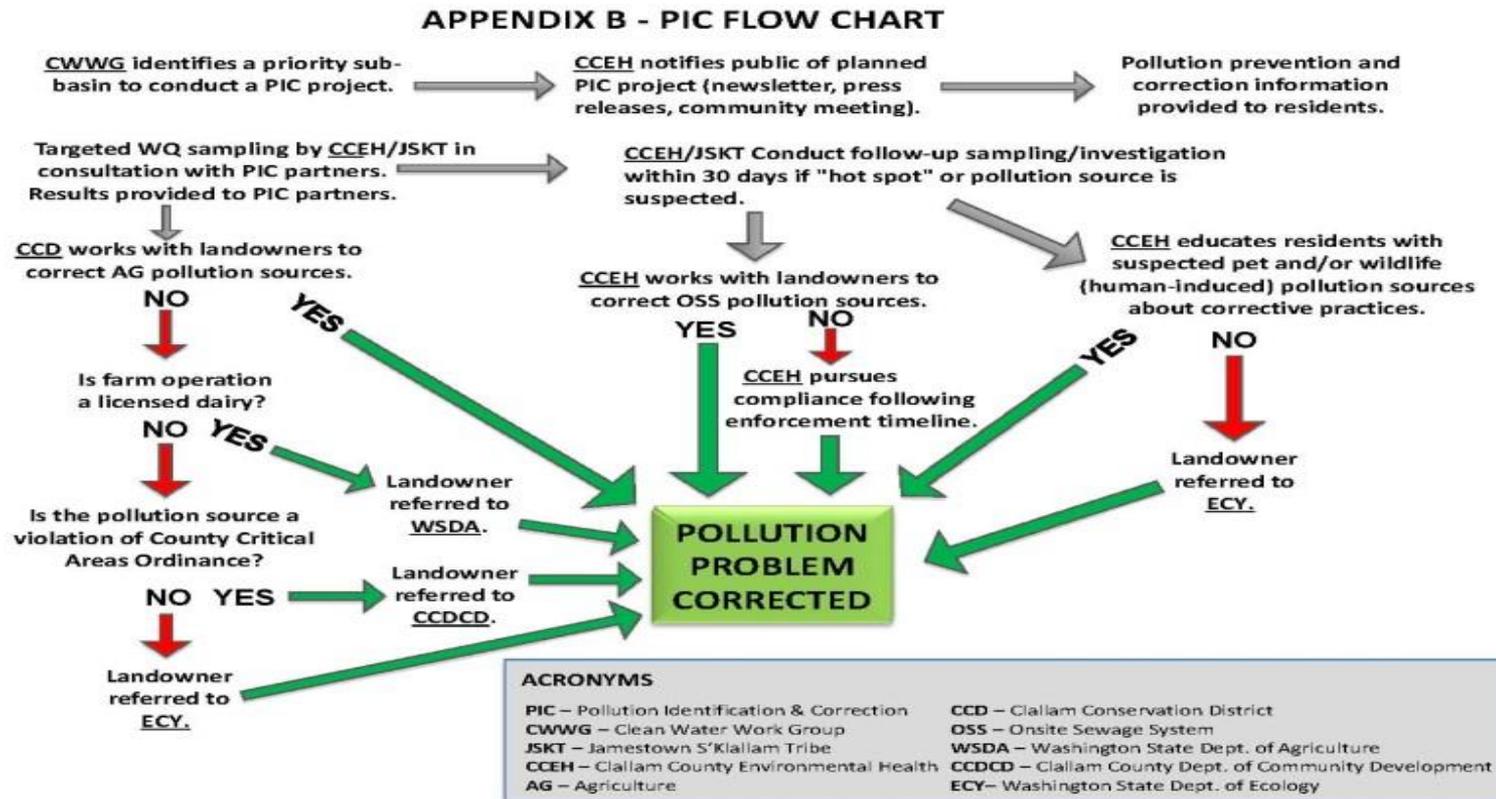
- Education is a primary component of our process
  - Residents equipped to make sound choices
  - Create drive to protect and value their water resources
- Outreach begins early on in program, but targeted messaging through TA based on individual property issues

# Resources Available

- Clallam County Environmental Health
  - OSS technical assistance
  - OSS incentives/rebates
- Clallam Conservation District
  - Livestock and farming technical assistance
  - Septic cost-sharing for OSS repairs
- Other
  - Craft3 loans
  - USDA loans

# Enforcement

- Still chasing down 2 ...
- We can't fine our way to clean water



# PIC Process

1. Select focus area
2. Segmented sampling
3. Parcel office research
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5. Parcel Sanitary Surveys
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Upper Matriotti/Lower Bell

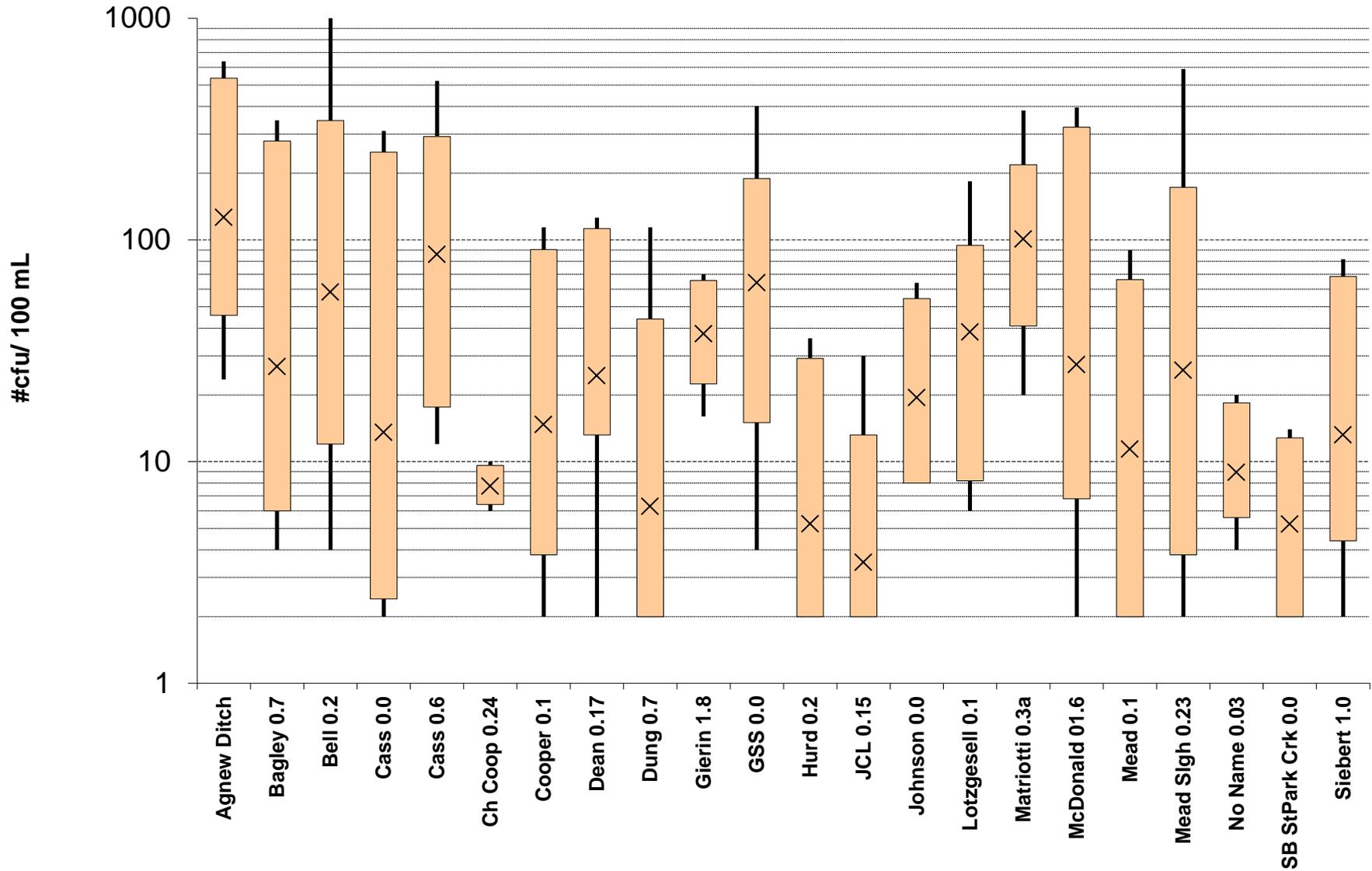
Lower Matriotti/Lotzgesell

Meadowbrook/Golden Sands

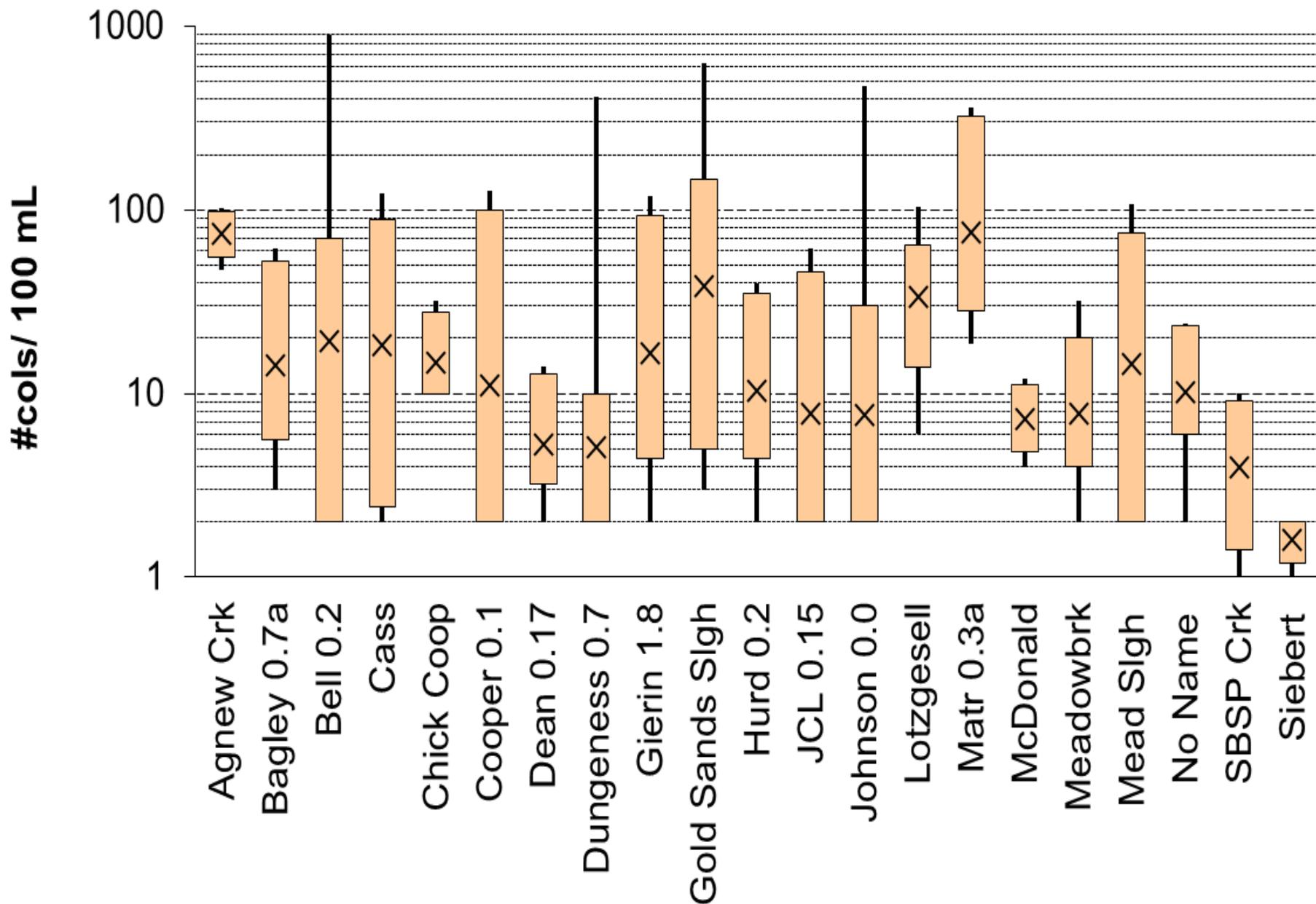
Sequim

Upper Matriotti/Lower Bell

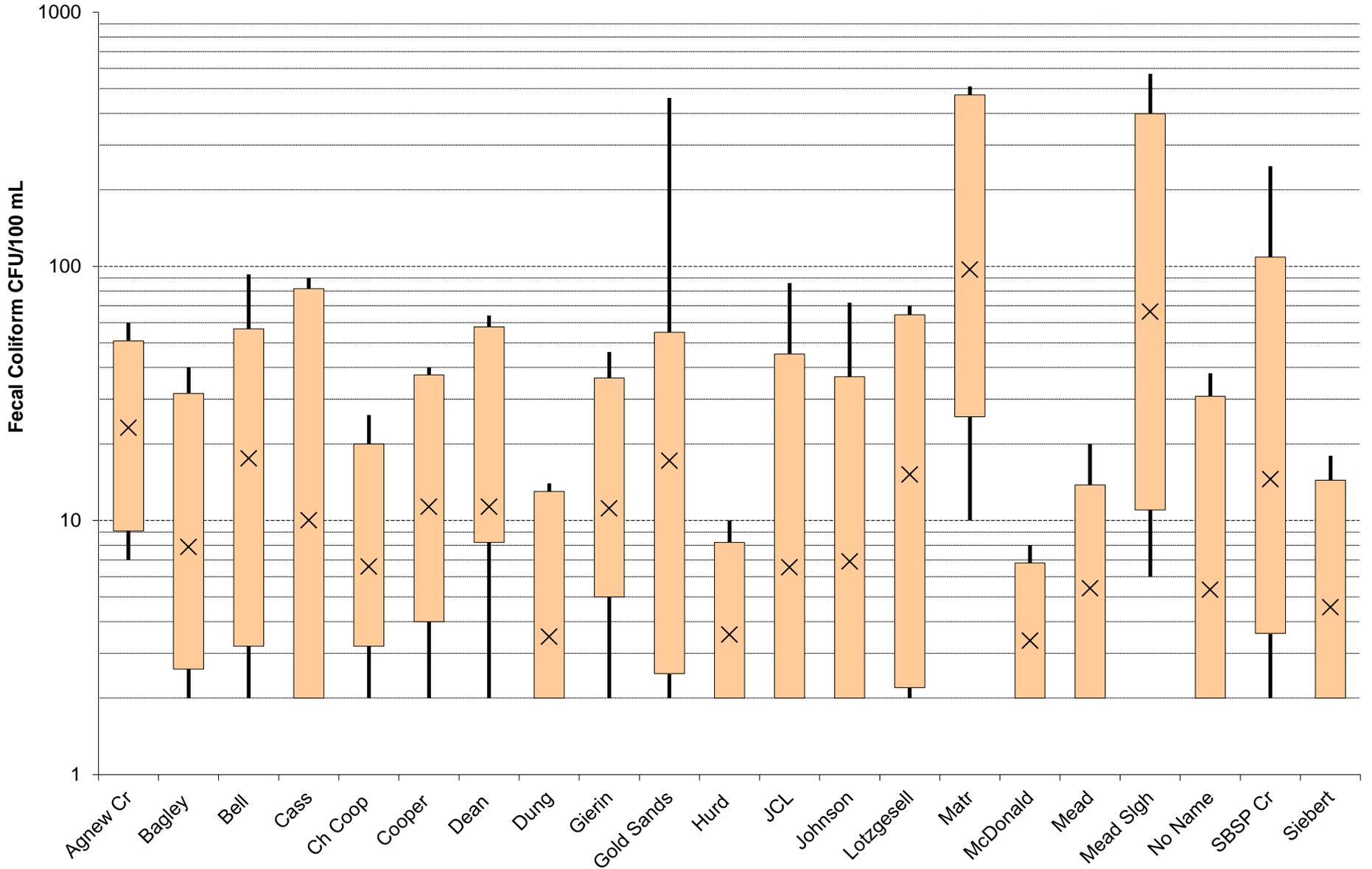
# Fecal Coliform May 2015-April 2016



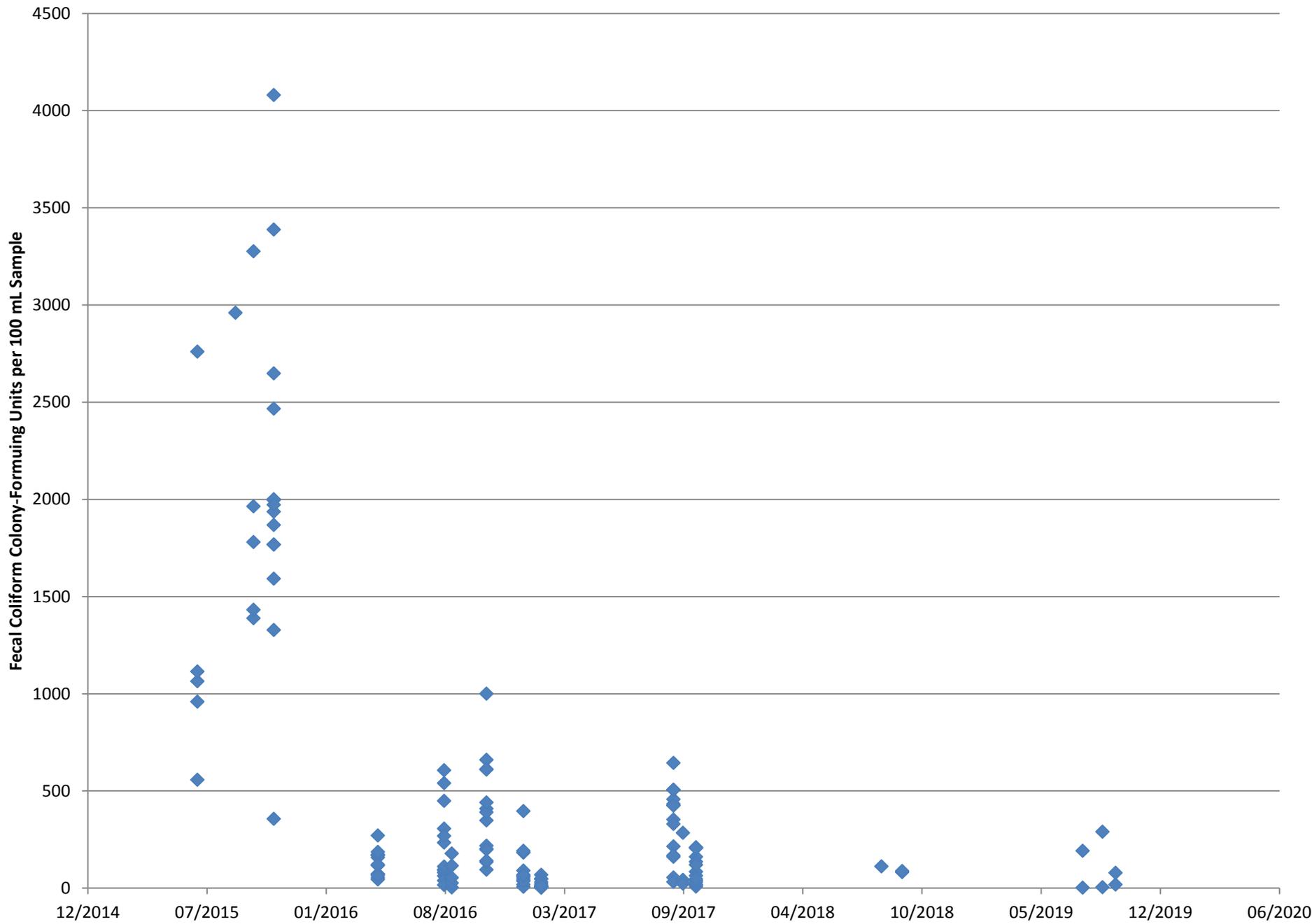
# Fecal Coliform (May 2016-March 2017)



# Fecal Coliforms (Apr 2017-March 2018)

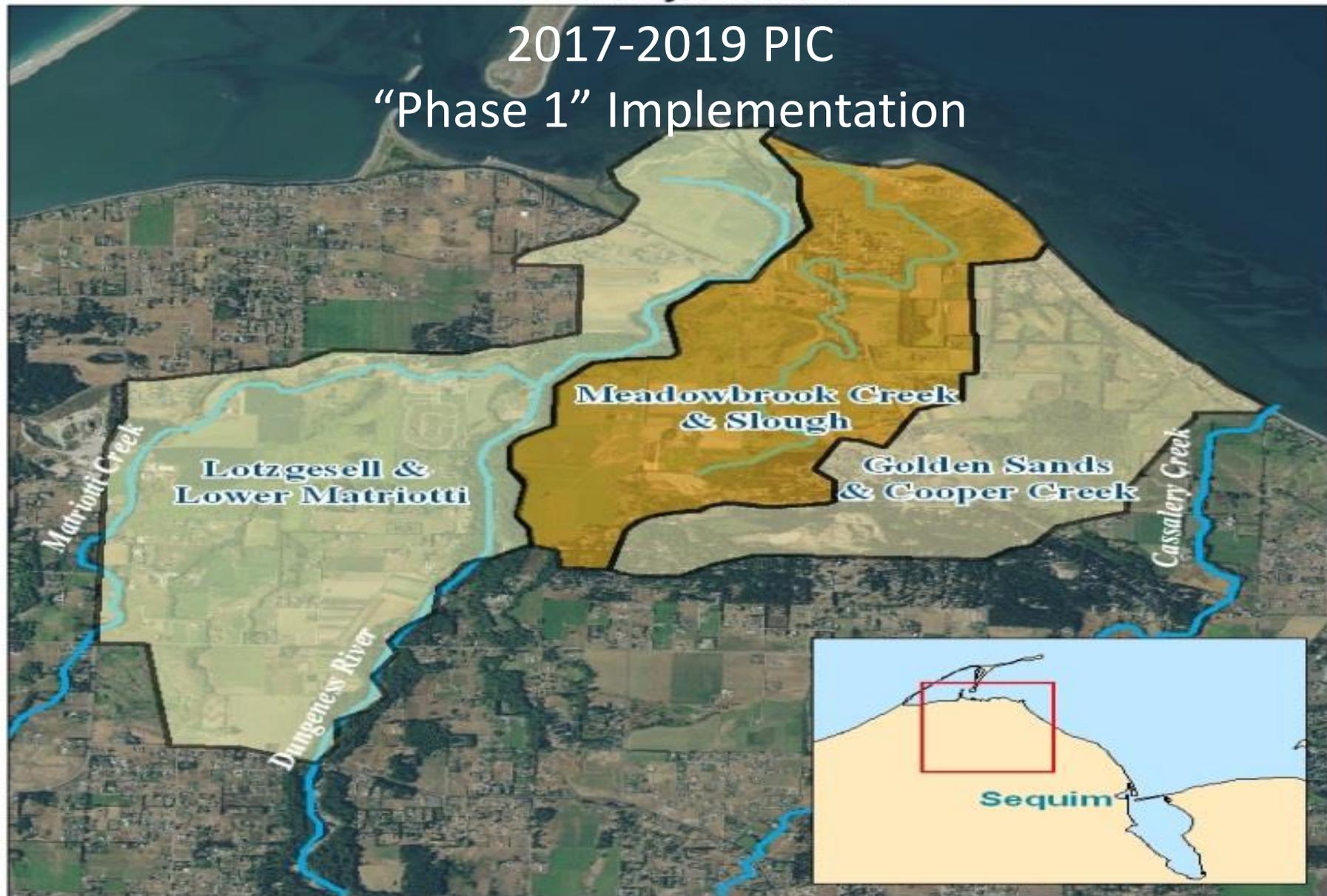


# Golden Sands Segmented Sampling for Fecal Coliforms



# PIC Project Area

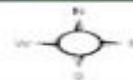
## 2017-2019 PIC "Phase 1" Implementation



0 0.25 0.5 1 Miles

Map Data Courtesy of:  
Clallam Conservation District  
Clallam County

Created 09/20/2017



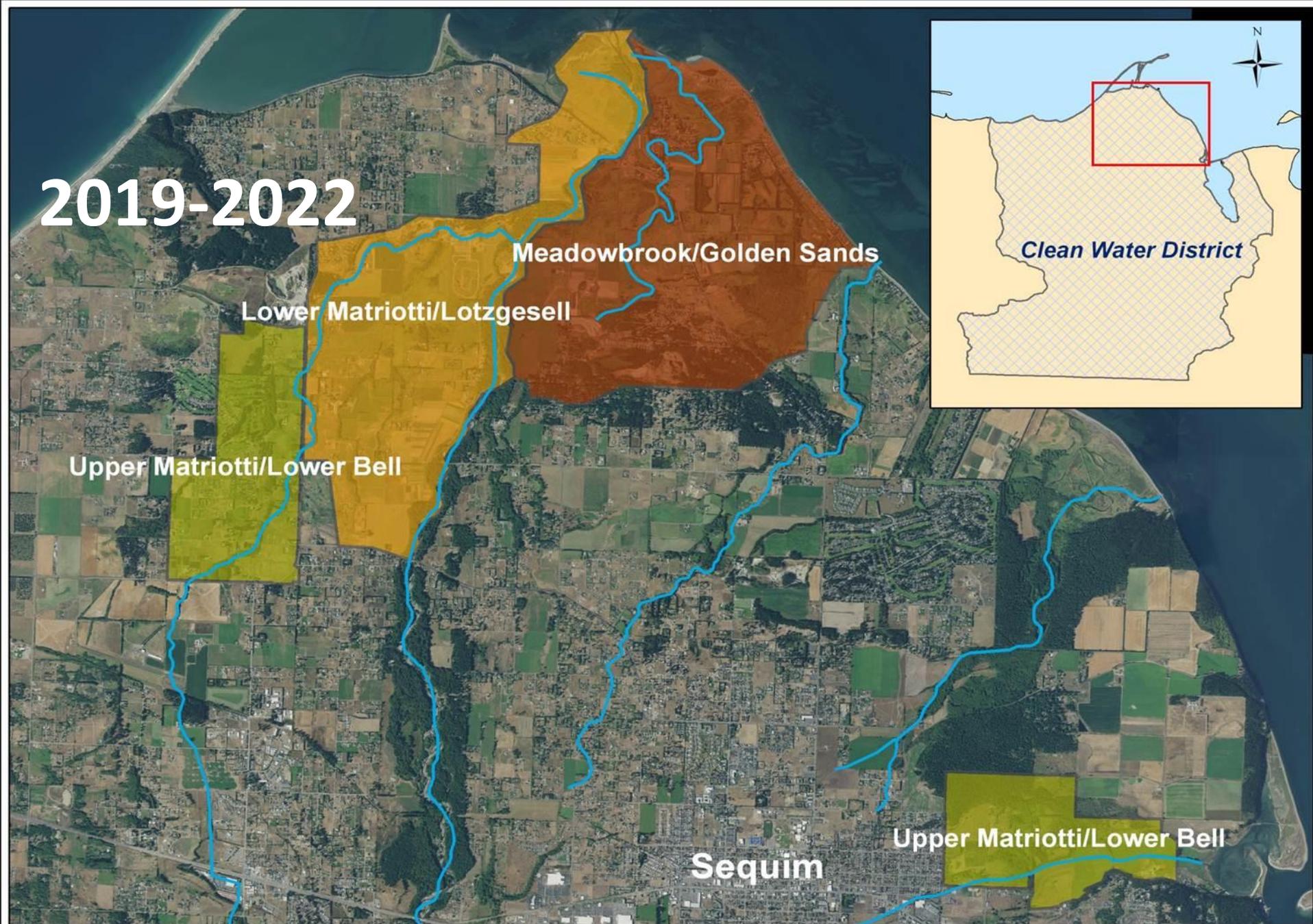
Sample Site	7/5/2018	7/11/2018	7/16/2018	Geometric Mean
LOT1	64	128	126	101
LOT2	26	40	44	36
LOT3	6	NA	NA	NA
LOT4	4	32	20	14
LOT5	8	58	10	17
LOT5a	18	2	16	8
LOT5b	28	NA	NA	NA
LOT6	12	18	8	12
LOT7	26	NA	NA	NA
MAT1	218	118	170	164
MAT2	250	144	146	174
MAT3	508	220	322	330
MAT4	94	156	178	138
MAT5	90	36	166	81
MAT6	26	108	86	62
MAT7	26	56	164	62
MAT8	6	86	110	38
MAT9	30	38	226	64
MAT10	90	114	184	124

Low Priority Hotspot
Medium Priority Hotspot
High Priority Hotspot

# Results

12a. Quantitative Description (e.g. 'shellfish beds reopened')	12b. Unit (e.g. 'acres')	12c. Target	12d. Increment changed during reporting period	12e. Total to date
Number of upgraded acres from Conditionally Approved to Approved in Dungeness Bay	Acres	90	0	0
Number of landowners in PIC target area educated about purpose of PIC projects to improve water quality	Landowners	700	0	363
Number of priority pollution sources identified in PIC focus area(s)	OSS, Agriculture, pet waste	20	0	17
Number of OSS failures identified	OSS failures	15	0	14
Number of OSS failures corrected	OSS Corrected	15	2	12
Number of livestock problems identified in watersheds draining to Prohibited or Conditionally Approved DOH marine sampling stations in Dungeness Bay	Ag problems	5	1	6
Number of livestock problems corrected in watersheds draining to Prohibited or Conditionally Approved DOH marine sampling stations in Dungeness Bay	Ag corrected	3	1	1
Number of hotspots identified	Hotspots found	5	0	10
Number of hotspots corrected	Hotspots fixed	5	0	0
Number of dye tests conducted	Dye tests	20	0	0
Number of enforcement actions	Enforcement	5	2	29

2019-2022



Meadowbrook/Golden Sands

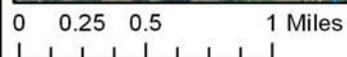
Lower Matriotti/Lotzgesell

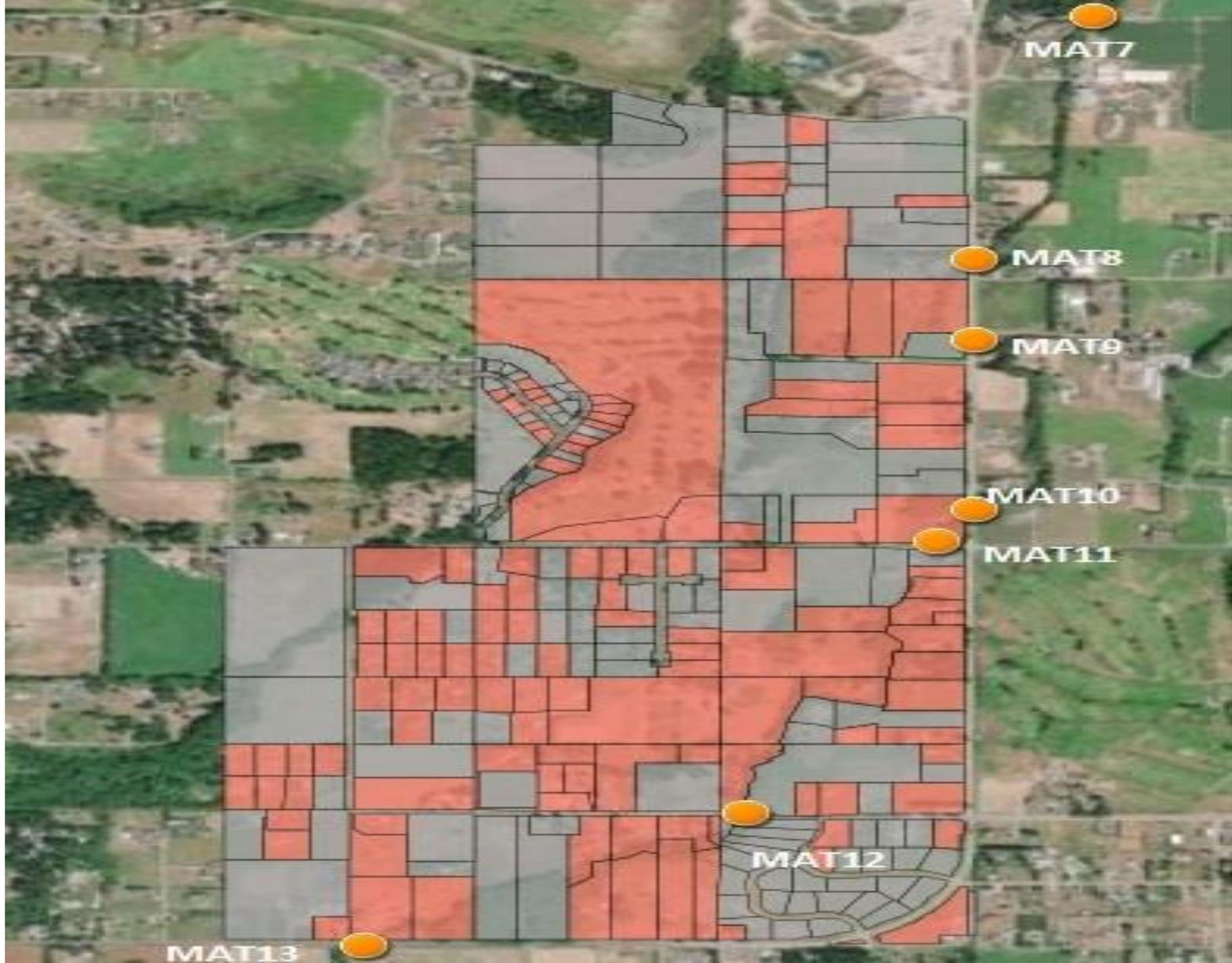
Upper Matriotti/Lower Bell

Sequim

Upper Matriotti/Lower Bell

Clean Water District





MAT7

MAT8

MAT9

MAT10

MAT11

MAT12

MAT13

BC3a



BC3b



BC3



BC4



BC Confluence



BC Outfall



BC2



BC5



Date/Site	2/25/2020	3/2/2020	4/8/2020	5/12/2020	5/27/2020	6/2/2020	6/15/2020	6/16/2020	6/24/2020	7/1/2020	7/7/2020	Geo Mean	Comments
BC_confluence	220		78		172	124			110			132.1	
BC2					576	160			178			254.1	
BC3	444	84	60		464	328			102			180.6	
BC3a		88	100		308	192			172			155.0	
BC3b		126	64		438	128			188			153.4	
MAT7								204	296	264		251.7	
MAT8								304	324	368		330.9	
MAT9								286	378	292		316.0	
MAT10	372				182	758		232	580	178		327.3	
MAT11									386	220	604	371.5	6/16/2020 qualifer = N
MAT12								142	158		28	85.6	
Cassalery Creek				216	136	124	210					166.3	5/12 and 6/15 were tren

# 2022-2024?

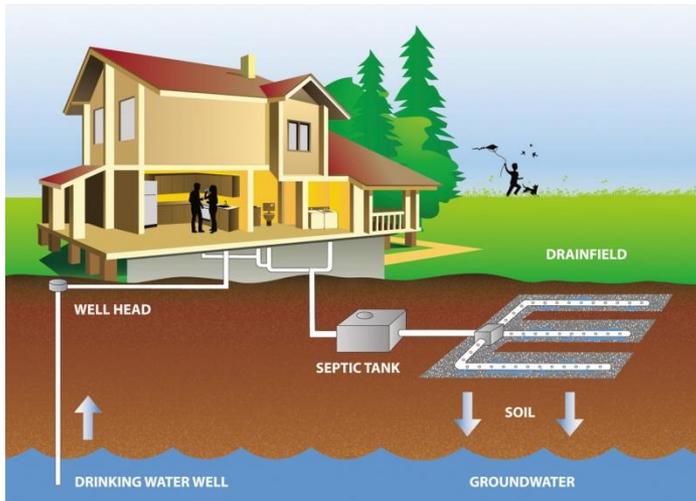


Scale 1:72,224

October 9, 2018 Clallam County GIS



**It's Not  
Just The  
Ducks...**

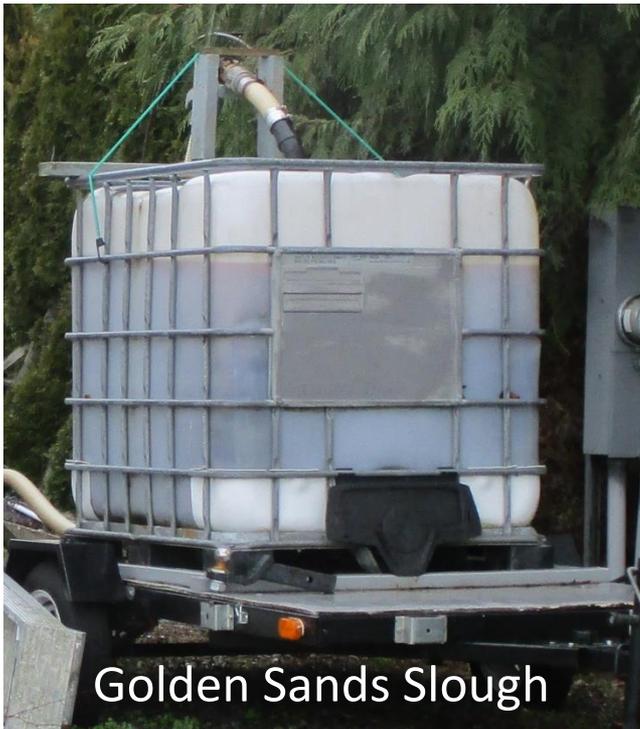




Meadowbrook Creek



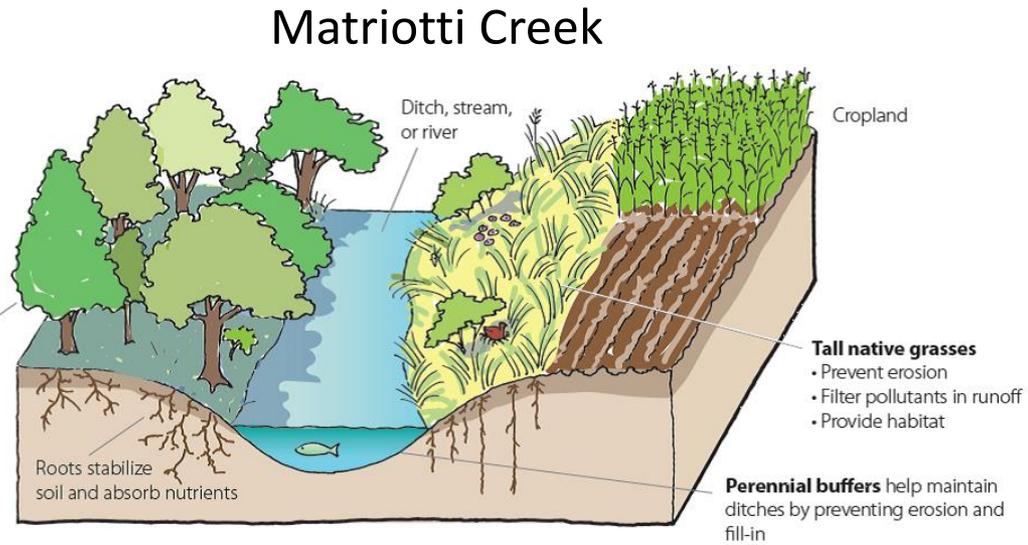
Meadowbrook Slough



Golden Sands Slough

How buffers protect water

- Trees**
- Hold soil in place
  - Use up nutrients
  - Shade the water
  - Provide habitat



Matriotti Creek

Ditch, stream, or river

Cropland

**Tall native grasses**

- Prevent erosion
- Filter pollutants in runoff
- Provide habitat

**Perennial buffers** help maintain ditches by preventing erosion and fill-in

Roots stabilize soil and absorb nutrients

# Lower Dungeness Watershed Sewage Disposal Status 2010

2010

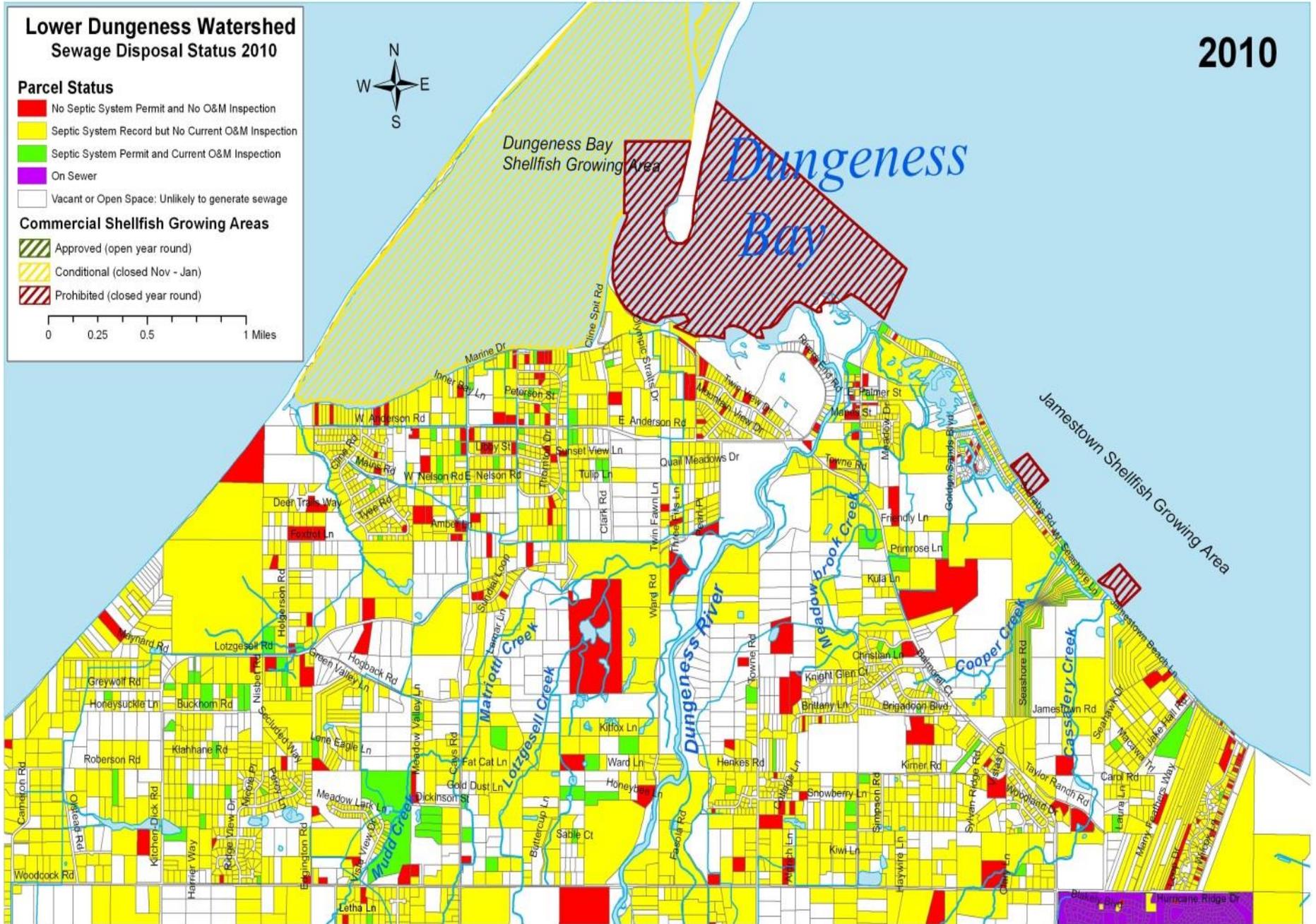
## Parcel Status

- No Septic System Permit and No O&M Inspection
- Septic System Record but No Current O&M Inspection
- Septic System Permit and Current O&M Inspection
- On Sewer
- Vacant or Open Space: Unlikely to generate sewage

## Commercial Shellfish Growing Areas

- Approved (open year round)
- Conditional (closed Nov - Jan)
- Prohibited (closed year round)

0 0.25 0.5 1 Miles



# Lower Dungeness Watershed Sewage Disposal Status 2019

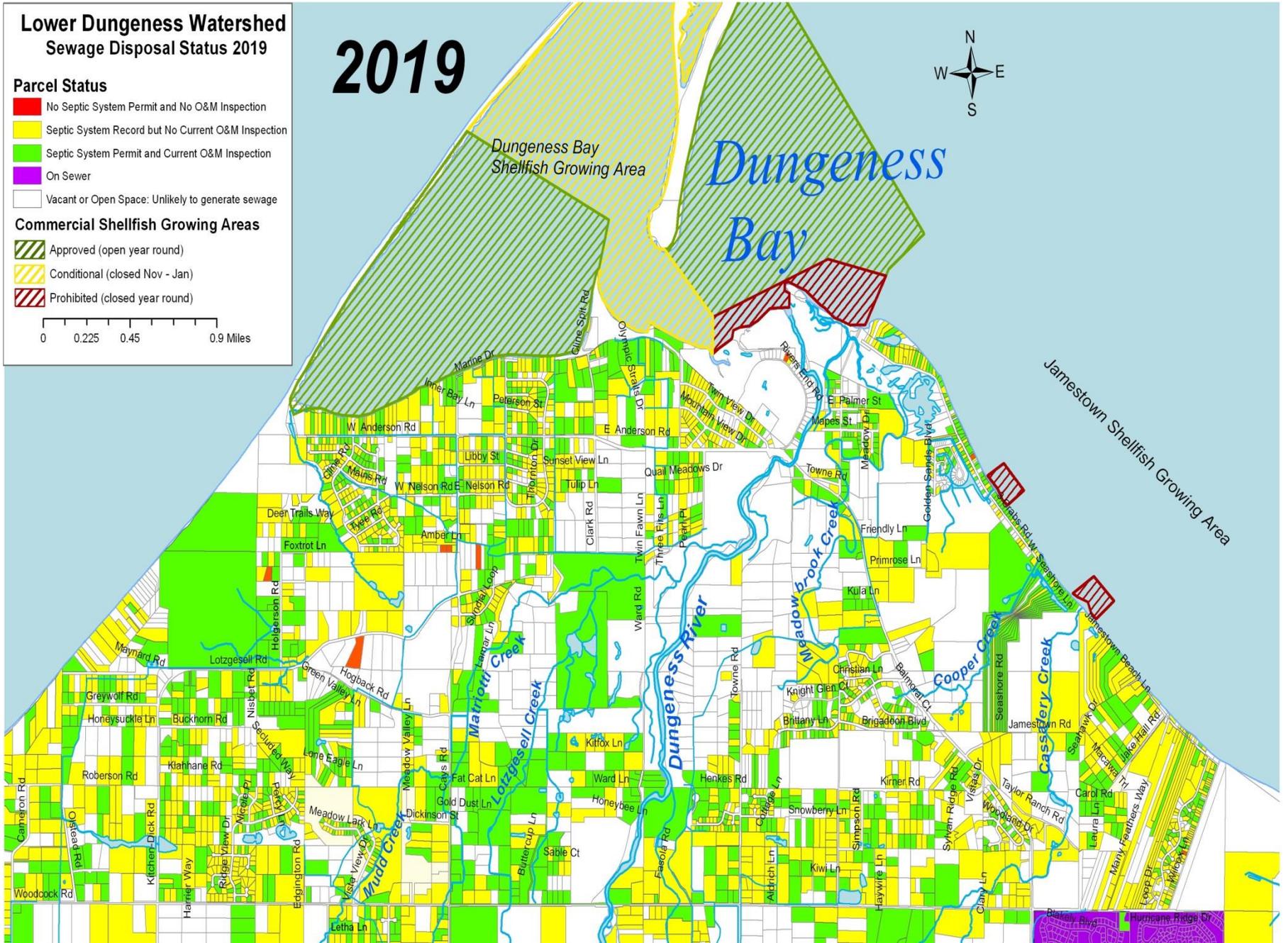
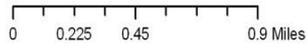
# 2019

## Parcel Status

- No Septic System Permit and No O&M Inspection
- Septic System Record but No Current O&M Inspection
- Septic System Permit and Current O&M Inspection
- On Sewer
- Vacant or Open Space: Unlikely to generate sewage

## Commercial Shellfish Growing Areas

- Approved (open year round)
- Conditional (closed Nov - Jan)
- Prohibited (closed year round)



Overall WQ/OSS budget for GRANTS:	OSS		PIC					
Category/Grant	NEP OSS 0152	LMP	DOE PIC 2020	NEP PIC	MISC.	Total OSS	Total PIC	Total
Salaries	\$35,880	\$22,667	\$44,850	\$0		\$58,547	\$44,850	\$103,397
Benefits	\$14,352	\$9,067	\$17,940	\$0		\$23,419	\$17,940	\$41,359
Office Supplies	\$350	\$333	\$60	\$0		\$683	\$60	\$743
Operating Supplies	\$0	\$0	\$100	\$0		\$0	\$100	\$100
Small Tools and Minor Equipment	\$0	\$0	\$0	\$0		\$0	\$0	\$0
IT Equipment	\$0	\$0	\$0	\$0		\$0	\$0	\$0
Professional Services	\$300	\$0	\$21,760	\$122,760		\$300	\$144,520	\$144,820
Cell Phone	\$0	\$0	\$0	\$0	\$460	\$460	\$0	\$460
Postage	\$2,500	\$0	\$450	\$0		\$2,500	\$450	\$2,950
Travel-Business	\$250	\$0	\$100	\$0		\$250	\$100	\$350
Travel-Training	\$2,250	\$333	\$860	\$0		\$2,583	\$860	\$3,443
Advertising	\$8,100	\$0	\$0	\$0		\$8,100	\$0	\$8,100
Equipment-Repair and Maintenance	\$0	\$0	\$0	\$0		\$0	\$0	\$0
Dues	\$0	\$0	\$0	\$0		\$0	\$0	\$0
Registration	\$400	\$0	\$0	\$0		\$400	\$0	\$400
License Renewal	\$0	\$0	\$0	\$0	\$400	\$300	\$100	\$400
OSS (56254.49.0065)					\$300			
Water Quality (56260.49.0065)					\$100			
Other	\$20,665	\$2,275	\$20,050	\$4,320		\$22,940	\$24,370	\$47,310
<b>Total:</b>	<b>\$85,047</b>	<b>\$34,676</b>	<b>\$106,170</b>	<b>\$127,080</b>	<b>\$860</b>	<b>\$120,483</b>	<b>\$233,350</b>	<b>\$353,833</b>

# Sustainable Funding Proposed to Board of Health

- 2007 w/ OSS Management Plan
- 2009 in BOCC briefing
- 2011 with Cascadia Consulting Report
- 2016 with BOCC letter
- 2019 multiple efforts throughout the year
- 2020 talks scheduled:
  - Review OSS Mgmt Plan – OCT 20<sup>th</sup> @1:30pm
  - Discuss fee proposal – NOV 17<sup>th</sup> @1:30pm

**THE TIME IS NOW!**

An aerial photograph of a river delta, showing a complex network of channels and distributaries. The water is a light, milky color, contrasting with the green and brown land. The text "Thank you, DRMT!" is overlaid at the top, and "Questions?" is overlaid in the center.

**Thank you, DRMT!**

**Questions?**