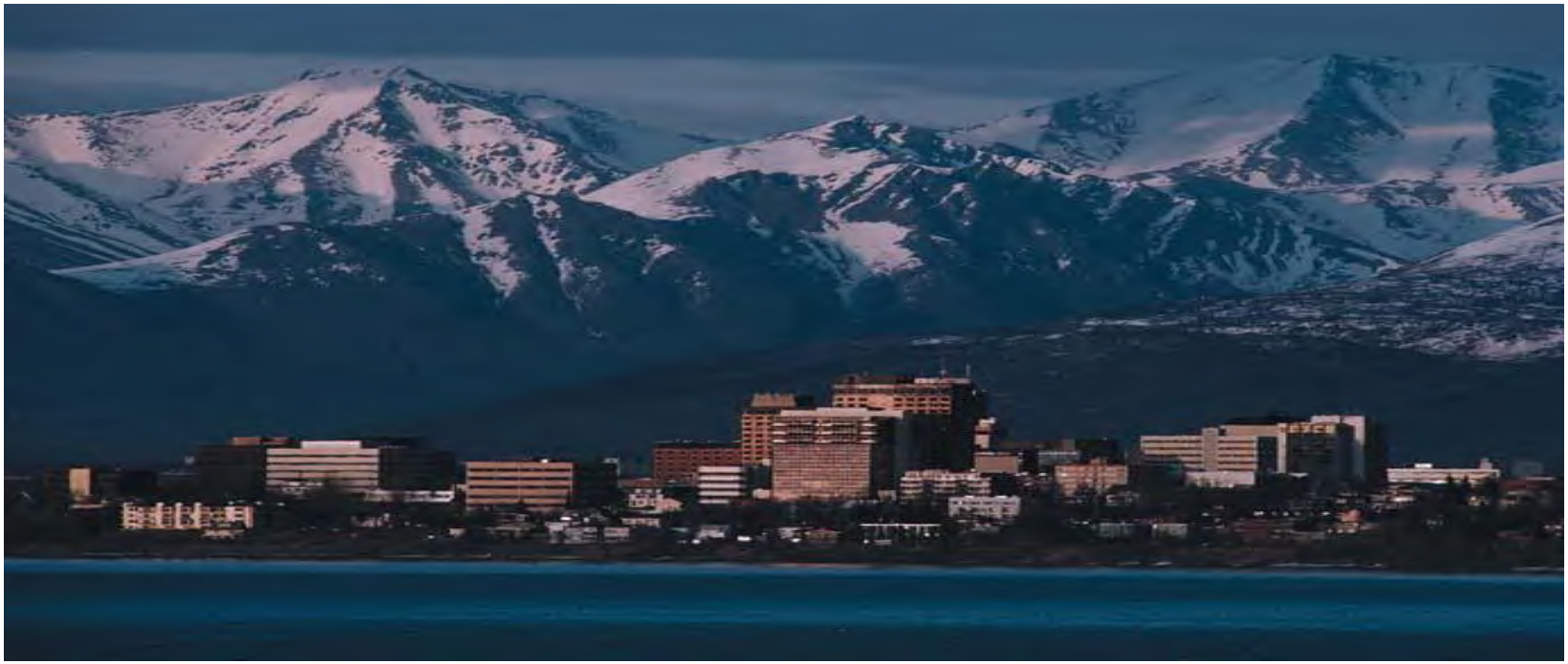
ADEC 2010 *Vibrio Parahaemolyticus* Control Plan Update



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Vibrio parahaemolyticus

Objectives:

- Review what we know about Vp
- Review what we think we know about Vp
- Review historical perspective and management strategies for Vp
- Highlight ISSC/FDA Mandatory Vp Control Requirements effective 2008
- Review the State's Vp Control Plan
- Recap Monitoring Activities to date

What We Know about V.p

- Occurs naturally in the marine environment
- Most V.p strains are harmless (non-pathogenic); only ~2% are pathogenic
- Some strains of V.p are more virulent than others (eg.O3:K6; O6:K18)
- V.p begins to grow at temperatures ≥ 15^0C. (on West Coast) typically in the warm months of the year
- ~59% of all V.p illness cases in U.S. are linked to consuming raw oysters, according to CDC

More of What We Know

- V.p is a reportable illness in AK and 29 other states in the U.S.
- Post harvest treatment methods (HHP, pasteurization, freezing) effectively kill V.p
- Cooking kills V.p
- Vibrios don’t need oxygen; anaerobic sediment is conducive to V.p growth

What We Think We Know

- V.p more likely to grow in low-salinity
- CDC estimates that ~2,655 cases occur annually, based upon a 20:1 infection to actual reporting rate
- Temperature changes may trigger toxins in V.p
- Bacteriophages (which add genetic material) may trigger toxins in V.p
- Illnesses seem to coincide with El Niño events

Historical Perspective

- 1950: V.p. discovered in Japan
- 1968: V.p. found first time in the U.S. in Puget Sound
- July-August 1997: 1st reported V.p outbreak in North America (largely WA & BC) -- 209 culture-confirmed illnesses associated with eating raw oysters -

1998:

- In response to the 1997 outbreak, PACRIM develops V.p Management Plan for submission to ISSC July 1998 conference
- May-July: Largest V.p outbreak in US; WA, Galveston Bay Texas, New York:
  - 416 illnesses reported in 13 states

Joint FDA, CDC, Universities study findings from 1998 outbreak:

- In Galveston Texas V.p serotype is 03:K6, common in Asia, never seen in U.S. (Source - Ballast water?)
- TDH+
- Urease negative
- Illnesses coincide with El Niño events
- 89% of oysters associated with illness were harvested in water temps above 22^0C (71.6^0F)

1998: First V.p Interim Control Plan FDA/ISSC

- Applied to growing areas with history of, or currently experiencing, V.p illnesses
- Established new criteria for closing growing areas:
  - Lowered total V.p count closure trigger from 10,000 MPN to 5,000 MPN.
  - Allowed for closure of growing areas based on sporadic illnesses - not just for “outbreak”
  - Established re-opening criteria

1999 ISSC:

- National Vibrio Committee(s) formed:
  - Vibrio Management Committee
    - Vibrio vulnificus Subcommittee
    - Vibrio parahaemolyticus Subcommittee
- ICP revised:
  - Growing areas to be shut down upon confirmation of 2 detectable tdh+ V.p environmental samples

1999-2003:

- No significant outbreaks during this period – just sporadic illnesses
- FDA conducts Risk Assessment; declares tdh+ as effective indicator
- However…. Summers through this period were cooler
- Grower Response during this period (and since):
  - Some growers elected to stop harvesting entirely during the typical "Vibrio months"
  - Some growers only harvested when the water temperature was below 62 F
  - Some growers labeled their shellstock "For Cooking Only"
  - Some growers continued to go about their usual business...

2004 AK Major Outbreak

- Another significant El Niño year
- Several outbreaks and lots of sporadic illnesses
- Alaska V.p outbreak
  - 54 cases identified; 8 (samples) confirmed
  - tdh+ confirmed in all cases – *both environmental and clinical samples*

2005 – 2007:

- 2005 - Sporadic illnesses along coast, but no major outbreaks
- 2005: ISSC in Alabama:
  - FDA attempts to establish stringent new harvest requirements
  - Proposal passes to conduct regional grower meetings
- 2006: A Hot Summer – and major outbreaks from Washington oysters
- 2006: FDA issues national press release warning that all West Coast shellfish could cause illness
- ISSC begins holding regional grower meetings around U.S.
- 2007: Washington passes emergency V.p rule, but outbreaks still occur throughout summer
- 2007: FDA again issues national press releases about Washington outbreaks, but narrows warning to specific growing areas

2008 FDA/ISSC Mandatory Requirements for Vp Control Plans

- Risk Evaluation
  - Oyster producing states must conduct risk assessment to determine if V.p illnesses are "reasonably likely to occur"
  - Even if risk is not determined based on historical factors, states must provide further justification for not developing a plan if their average water temperatures exceed:
    - 60^{o}F for waters bordering Pacific Ocean
    - 81^{0}F for waters bordering Gulf of Mexico or Atlantic Ocean (NJ and South)

IF risk is present - State Control Plans must include the following:

- Measures to reduce risk of V.p illness may include procedures and resources to:
  - Establish one or more triggers for when control measures are needed
  - Implement one or more control measure to reduce risk, including:
    - Post-harvest processing
    - Closure of area to harvest
    - Restrict to harvest of product labeled “For Cooking Only”
    - Limiting time from harvest to refrigeration to no more than 5 hours, or other times as determined by authority
    - Other measures that ensure levels of total V.p, after cooling to 60 F, do not exceed average levels from harvest water by more than 0.5 logorithms
    - Other (scientific) measures as determined by authority, based on scientific studies
- State must annually demonstrate effectiveness of Plan or modify when verification shows Plan is ineffective

AK *Vibrio parahaemolyticus* Control Plan

Specific Requirements :

1. Growing Area Identification (implicated with Vp Illnesses or if avg water temperatures ≥60^{0}F)
2. Water Temperature Monitoring:
   - Beginning 6/15 – 9/15, weekly temp monitoring
   - Option to drop gear below thermocline if temp ≥ 60^{0}F
   - Option to close growing, no harvest if temp ≥ 60^{0}F
3. Oyster Testing for Vp if temp ≥ 60^{0}F
4. Environmental Testing for Vp, during 6/15 - 9/15

AK Vp Control Plan cont.

5. Time/Temperature Control – shellstock temp must be controlled to ≤ 50^0F within 5hrs after harvest by icing, mechanical refrigeration or other approved methods
6. Illness outbreak – close area implicated. Need 2 consecutive oyster meat samples, minimum 4 days apart with 0 tdh+ and <5,000 tlh+ CFU to reopen area
7. Recall Plan

WATER TEMP MONITORING

- Record water temperatures weekly beginning 6/15 – 9/15. Take temps at the top of the aquaculture gear (~ 2 meters)
- The grower maintains permanent record, with results reported to DEC Shellfish Coordinator.
- If water temperatures ≥60°F (15.6°C), temperatures must be taken daily.
- Water temperatures taken at or about 5 PM.

Examples of Water Temperature Monitoring Equipment

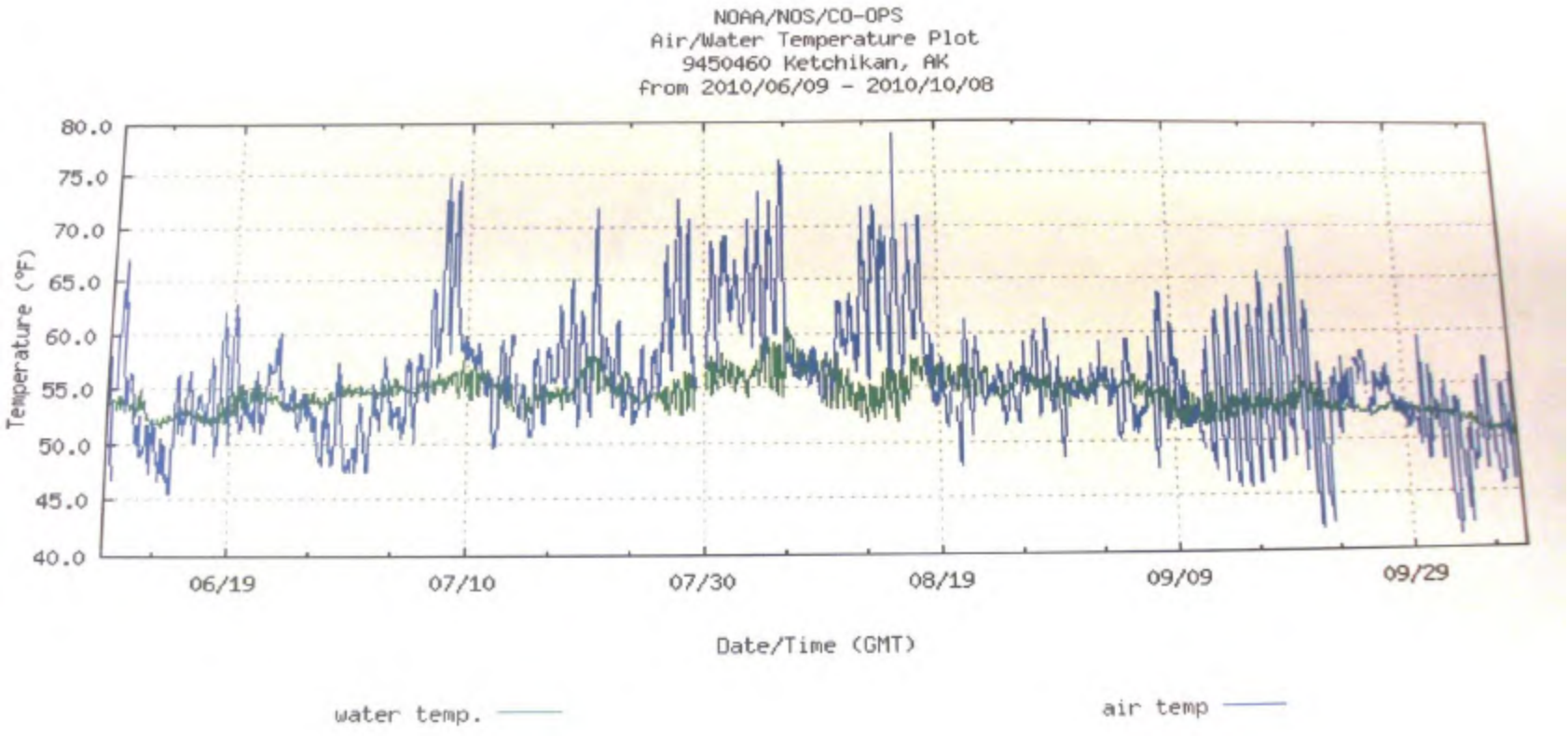
- DATA LOGGER
  - Hobo logger – set timing period (variable) and at various depths

- YSI EC300 (YSI Environmental Inc)
  - measures temperature & salinity
- SOLINST TLC METER (Model 107)
  - Measures temperature & conductivity

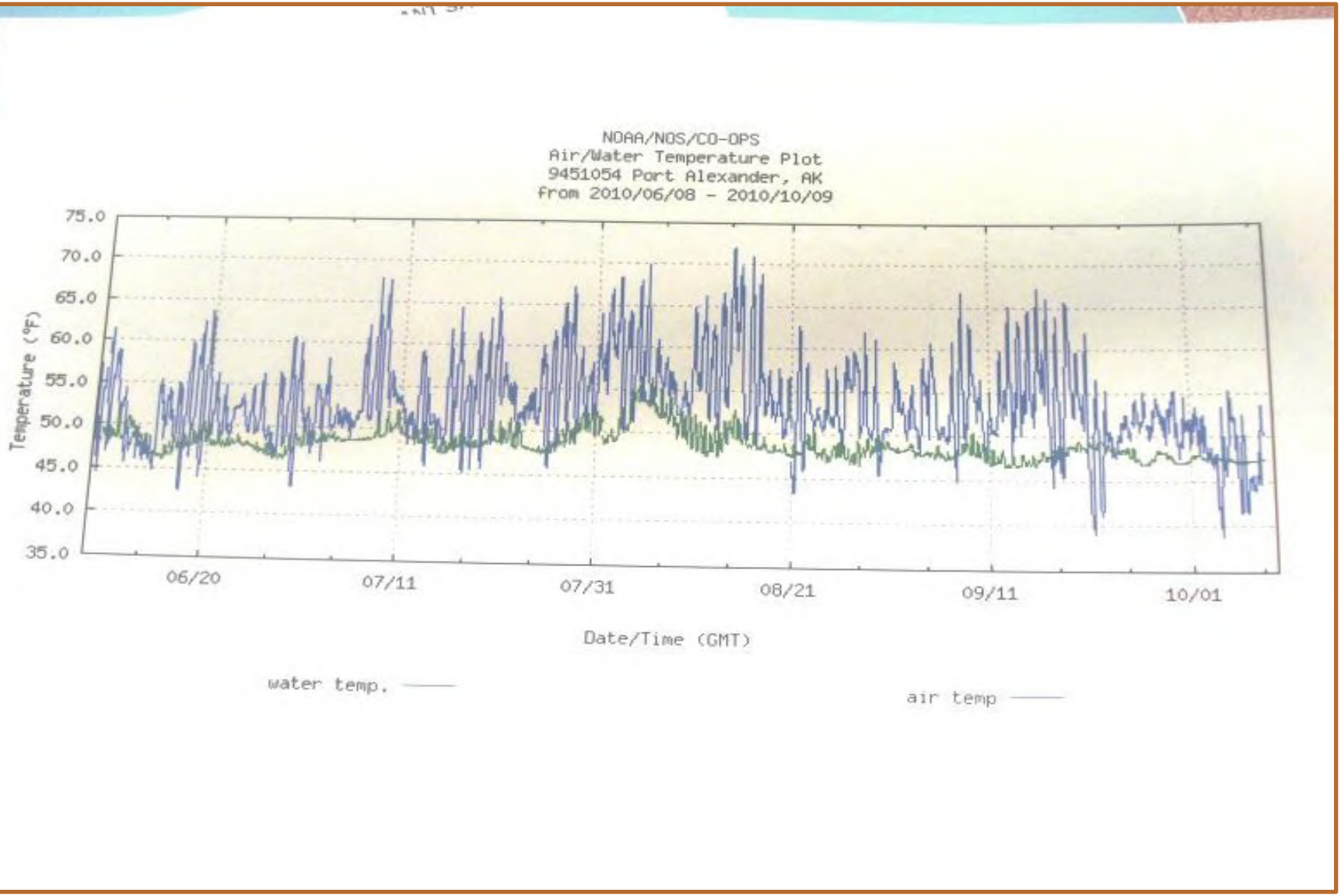
OYSTER MONITORING

- Submit one oyster sample if water temperatures persist at ≥ 60°F (15.6°C), for the months of July 1st through September
  - Sample consists of at least 12 oysters
  - Ship to DEC Environmental Health Laboratory for analysis.
- Sample frequency may change based on sample results.

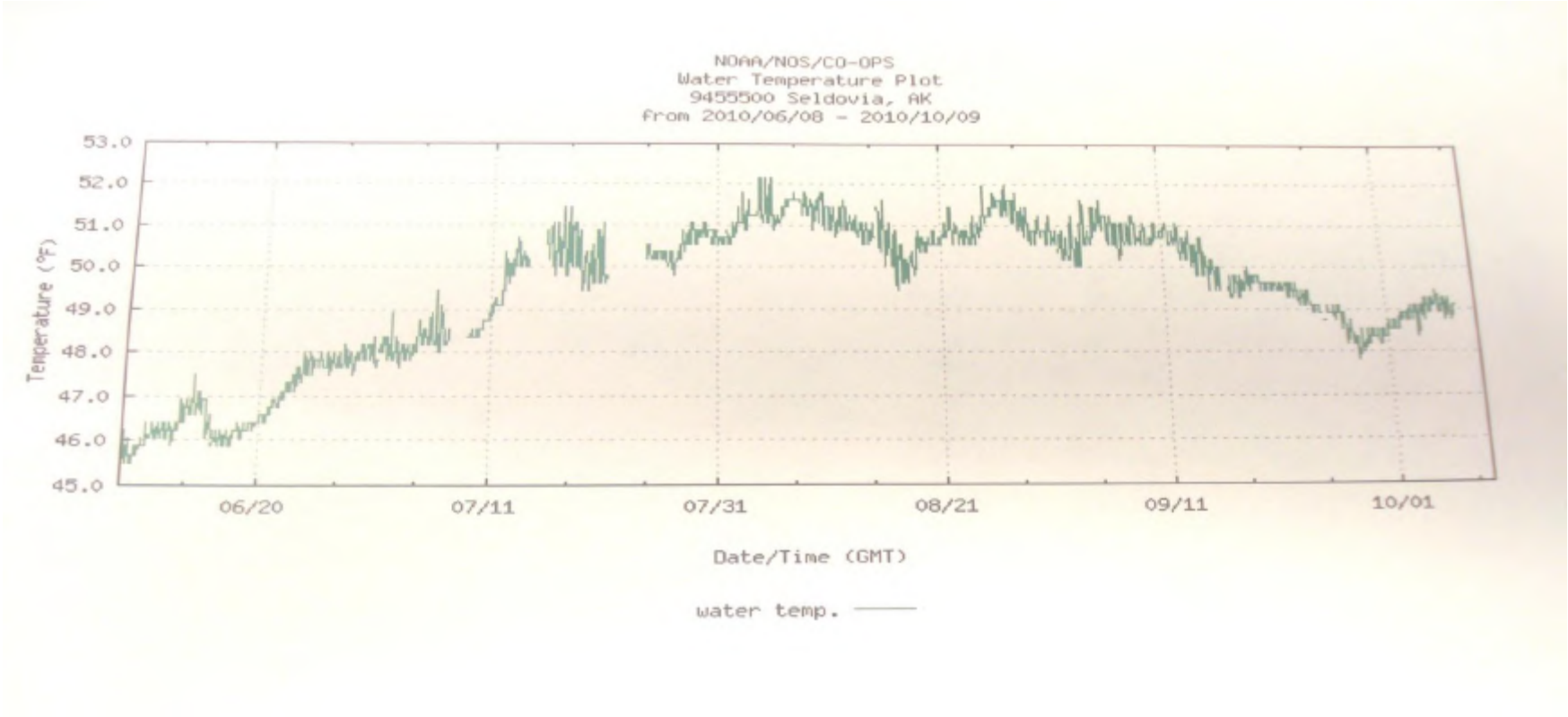
AK WATER TEMPERATURE
KETCHIKAN



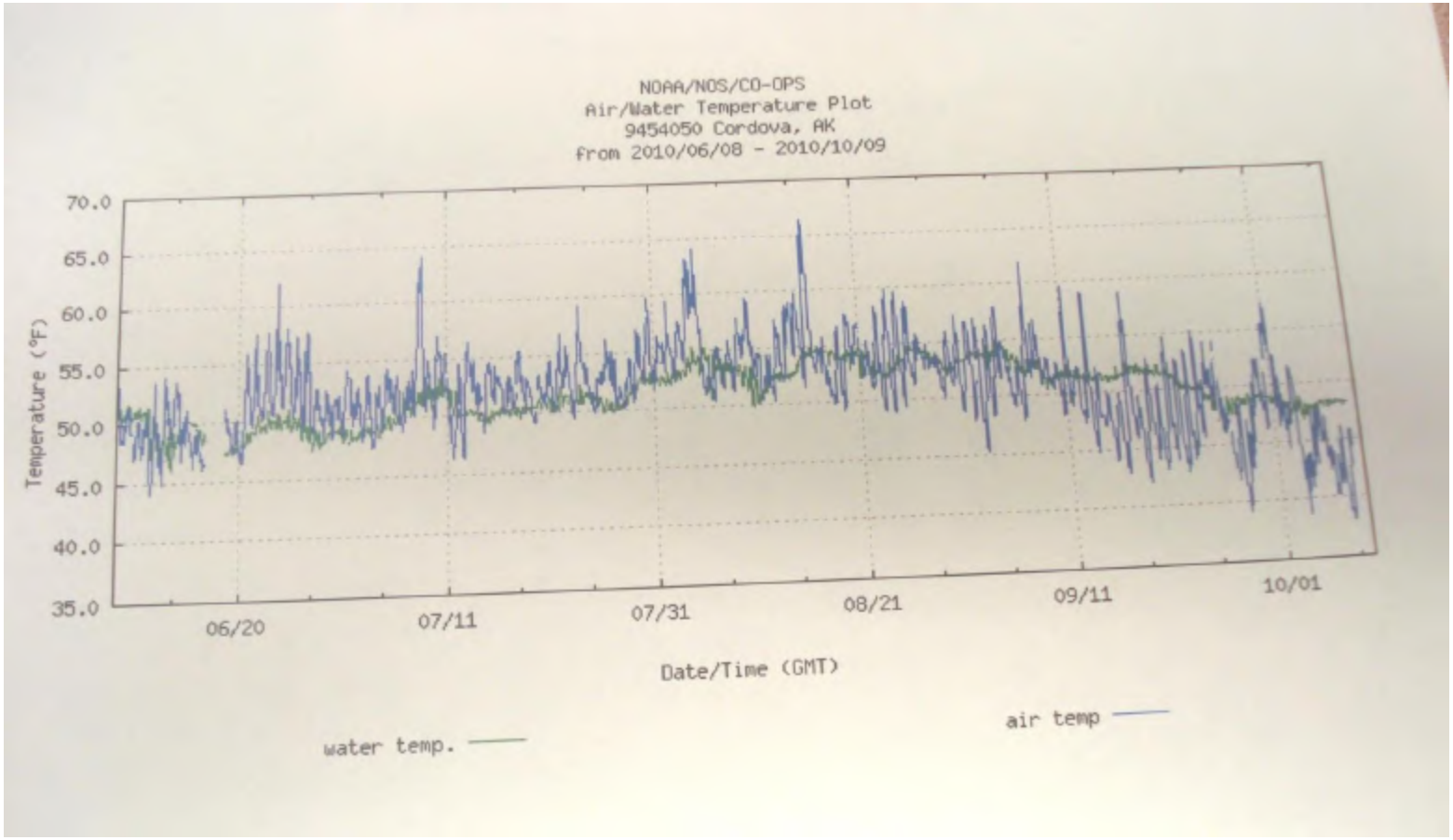
AK WATER TEMPERTAURE
PORT ALEXANDER



AK WATER TEMPERATURE
SELDOVIA



AK WATER TEMPERATURE
CORDOVA



Vp Illness Log

- 2006 3 Source oyster not AK
- 2007 2 Source oyster not AK
- 2008 0
- 2009 3 Source oyster not AK
- 2010 1 Source oyster not AK

Environmental and Tissue Sampling

Year	No of Samples (water & oyster)	Vp Isolated	Comment
2006	22	no	
2007	13	no	
2008	18	no	
2009	21	yes	1 sample SOSE growing area
2010			

2010 WA Continues to Struggle with Vp

- Implement stricter control measures
  - Close harvest area
  - Continuous icing of shellstock immediately after harvest
  - Hood Canal and Wallapa Bay growing areas closed in all of August 2010.

Thank You