



Sunrise over Macaulay saltwater site



Macaulay Salmon Hatchery Report

Board of Directors Meeting – April 13, 2024

2024 Ponding Season



Left: Ponding the BY 23 Chinook

Top: Staff training on the ponding process

BY 23 Chum Inventory

	Production Goal	Current Population
MSH	12,000,000	11,070,000
Thane	24,000,000	22,514,000
Amalga	48,000,000	41,191,000
Boat Harbor	24,000,000	20,493,000
Limestone	15,000,000	11,233,000
Total	123,000,000	106,501,000



Thane rainbow

Chum Rearing



Amalga



Limestone



Boat Harbor

BY 22 Chinook Smolt Inventory



Crew making room for BY 23 ponding

Total Chinook Smolt	954,000
Smolt Population Splits	
MSH	220,000
Thane	200,000
Auke Bay	90,000
Fish Creek	250,000
Lena Cove	195,000

BY22 Coho Smolt Inventory

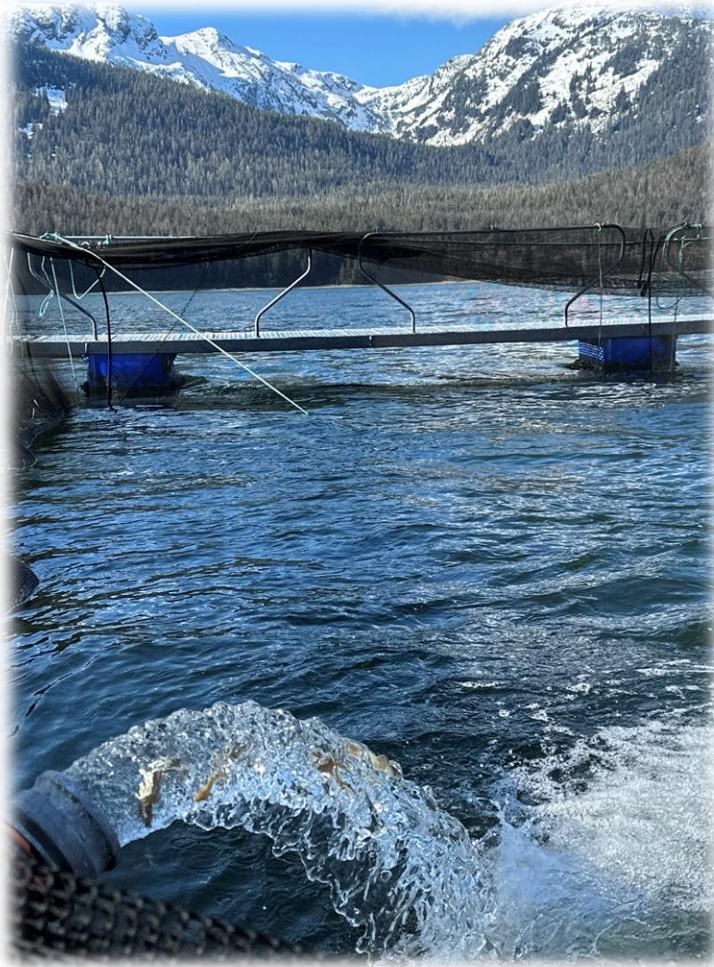
Total Coho Smolt	1,290,000
Smolt Release Plan	
MSH	290,000
Thane	1,000,000



Left: spring tag retentions

Above: Coho transfer

BY23 Chinook and Coho Inventories



Thane smolt arrival

Current Coho Inventory	Incubation
Alevin	307,000

Current Chinook Inventory	Raceways
Fed Fry	1,174,000



Photo: Anchors away

BY23 Chum Mortality

~20 million total fry loss to date

Power Generation Background

- MSH powered normally by AEL&P
- Backup 250KW diesel generator
- ASCO automatic transfer switch (ATS)



Left: ASCO ATS

Top: MSH backup generator

Power Outage

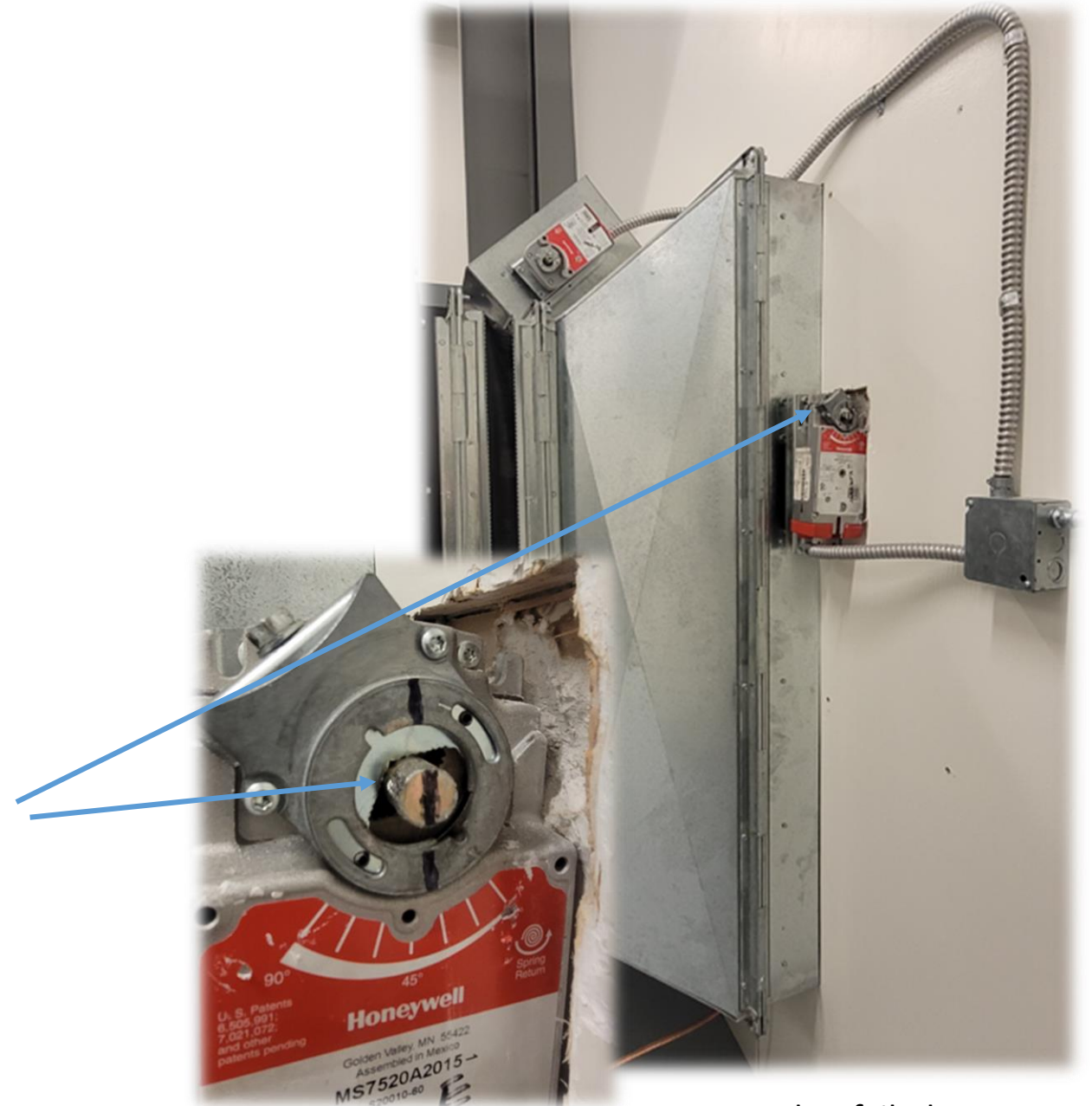
- 10/11/23 there was a power outage around 8:00pm at MSH
- Onsite Maintenance was present
- Alarm dialer worked and on call Fish Culturist responded to MSH
- Generator fired up and ATS restored power to MSH
- Everything appeared normal and rounds were being conducted on fish



Current Alarm Dialer to LJ Alarms

Incident Timeline

- After 20 minutes into the AEL&P outage, all power was lost at MSH and the site went dark
- Generator room was noticeably hot, so doors were opened to the generator room to allow air flow
- On site staff alerted Manager and Maint. Supervisor and the Maint. Supervisor responded to site
- Generator was found in thermal overload protection
- Louvers to allow air across radiator was found in the closed position due to a loose set screw



Louver that failed

Restoring Power

- Louvers were manually opened
- Generator was restarted however no power still to site
- ATS tripped between S1 AEL&P position and S2 Generator
- ATS was manually cycled to the S2 position and generator fired up again
- Power was restored to MSH and water started flowing again
- Total time with no water ~45 minutes



MSH backup generator exhaust and vents

After Power Restoration

- Fish were checked again with main concern being chum incubation
- Dissolved oxygen readings 0-1 mg/L as water started flowing
- Had some immediate fallout the next morning of impacted chum
- Following days thorough incubation checks were conducted
- Chum were sent in to Pathology for a condition report
- Concern of future developmental issues and SW transition loss

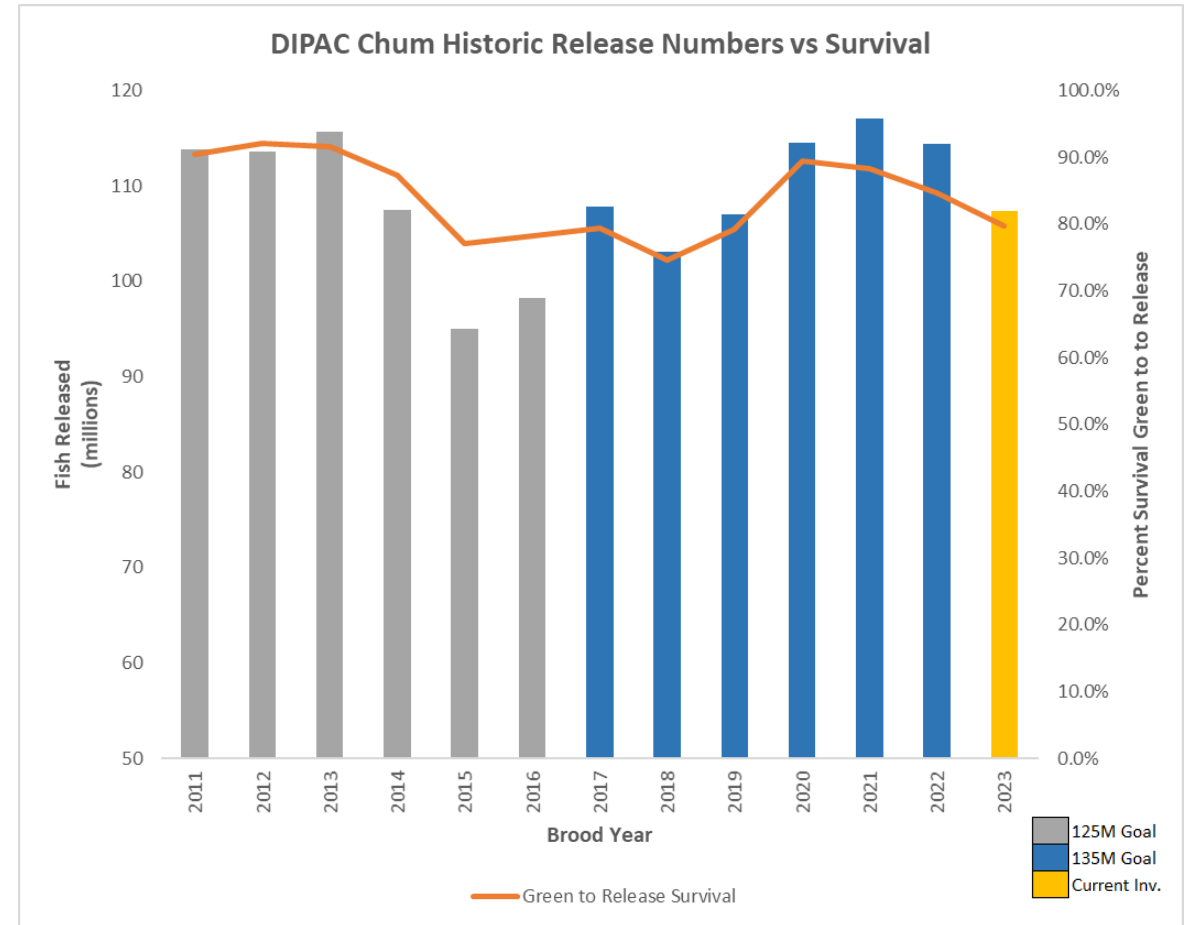
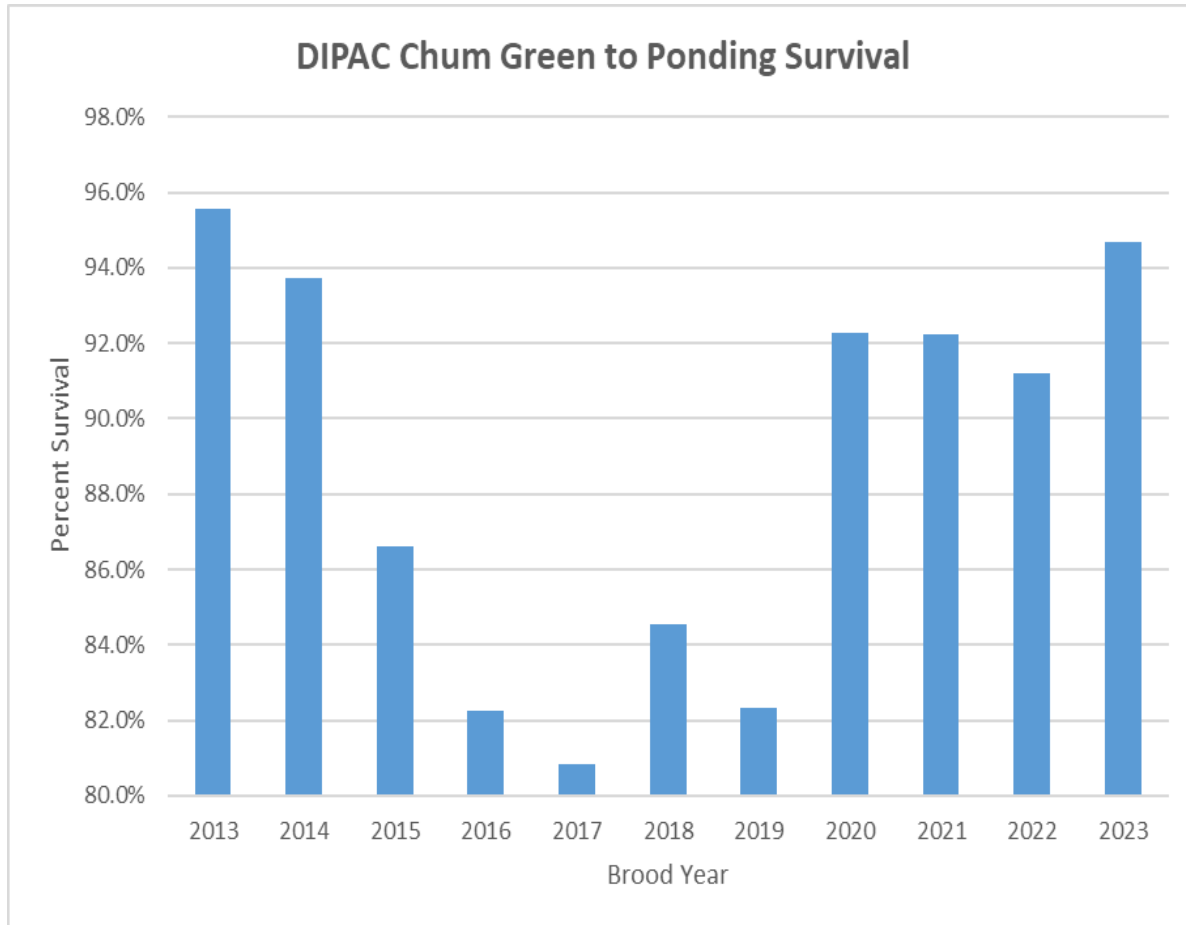
Changes to Operations

- Longer monthly tests running off generator
- Better monitoring during power outages of power generation
- Training more staff on the power generation system & keeping up with frequent trainings



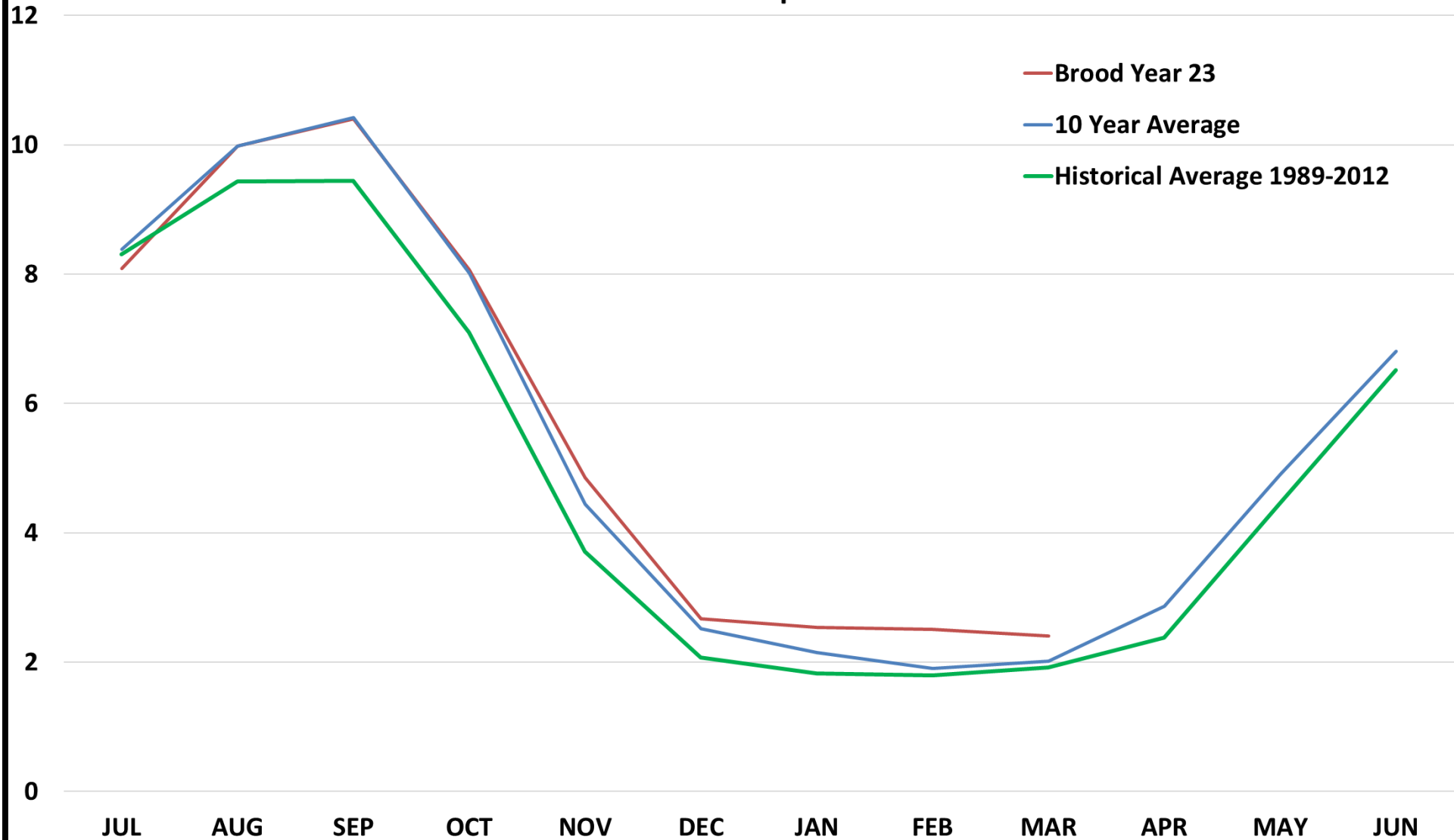
Checklists for monthly run tests and emergency monitoring

Current BY23 Status



How bad could it have been? Other concerns with changing climate?

Brood Year Temperatures



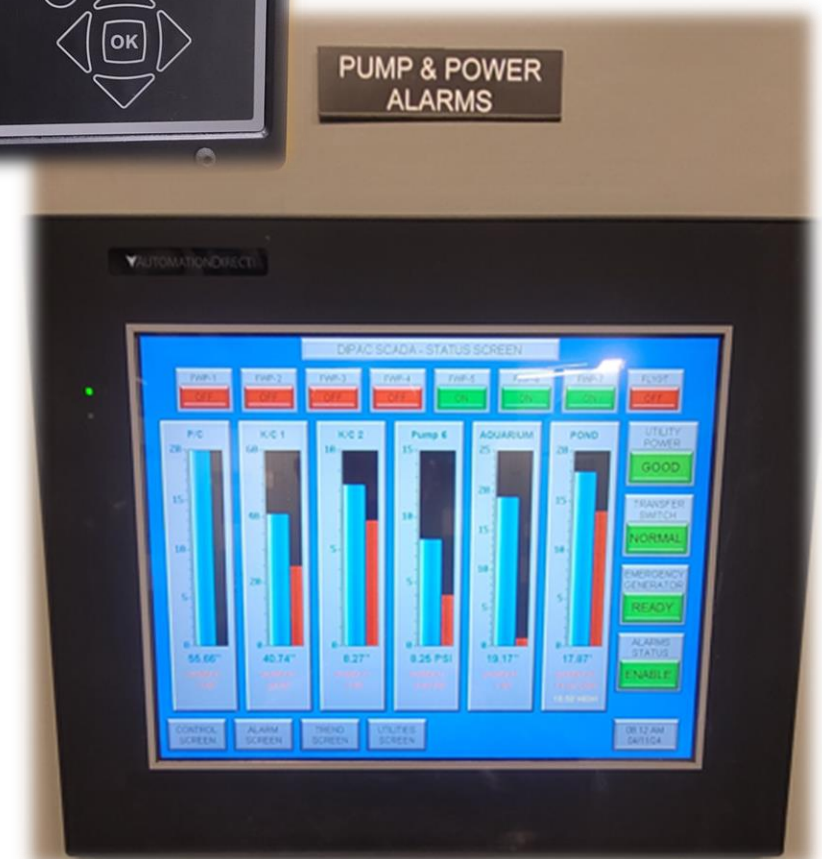
Second earliest ponding on record

Future Improvements

- Updated PLC alarm system with more data inputs and alarm set points
 - Generator information with high temp alarm set points
 - Louver position indicators
 - Off site remote monitoring for managers
- Diesel powered pumps for alternate water input from pond
 - Increased redundancy



Left: CAT Display
Bottom: Current PLC



Questions?

