



Mountain View Pool Evaluation

Friday, 08 September 2023

Prepared For City of Port Townsend

1919 Blaine Street, Port Townsend, WA 98368

A handwritten signature in black ink, appearing to read "R. Nachreiner".

Ryan Nachreiner

Water Technology, Inc.

INTRODUCTION

WTI has been commissioned by the City of Port Townsend to report on the current condition of the existing indoor pool located at 1919 Blaine Street. WTI visited the facility on September 8, 2023, toured the pool and related amenities, and met with staff to discuss operations. The enclosed report documents the observations from the site visit and outlines recommended capital and operational changes.

The condition of a facility is a major determination of the effort and cost of maintaining the utility and value of the amenities. A deteriorated facility will demand higher annual operating expenses over time as parts break, systems fail, finishes deteriorate, and structures weaken. There are also efficiencies lost when operating aging systems or equipment which are unable to take advantage of current methods and financially sustainable practices. The recommended repairs, replacements and renovations described in this report seek to modernize aquatic components and renew the efficient lifespan of the facility.

The purpose of this evaluation is to observe the present condition of the aquatic amenities and aquatic mechanical systems at the existing Mountain View Pool. The evaluation consists of visual examination of the pool and associated mechanical equipment. The report outlines the present condition of the systems, equipment, and components and provides recommendations for repairs or replacements. Potential options for facility repair or replacements are given an estimated probable cost of construction.

Aquatic elements include pool vessels, water features, pool filtration systems, pool circulation pumps, piping, valves and controls, and water treatment systems. Observations were conducted in a non-destructive manner and did not involve the removal of any structures or disassembly of any equipment.

Included in the report are observations and indications of the condition of the accessible means of pool entry and exit. WTI has endeavored to identify problems with the means of access and potential non-compliance with the Americans with Disabilities Act (ADA). Observations and evaluations included in this report do not constitute certification or verification of compliance with ADA requirements. ADA compliance is a legal opinion, and WTI is not able to anticipate or guarantee judicial interpretation with respect to a facility's legal compliance. WTI recommendations are based on a current understanding of the technical requirements of ADA regulations on aquatic amenities.

Compliance with Virginia Graeme Baker Pool and Spa Safety Act (VGBA) regulations has not been verified or investigated as a part of this evaluation and report. Any statements regarding drains, suction fittings, or any other component pertaining to VGBA are preliminary observations only, and further inspection to substantiate compliance is necessary.

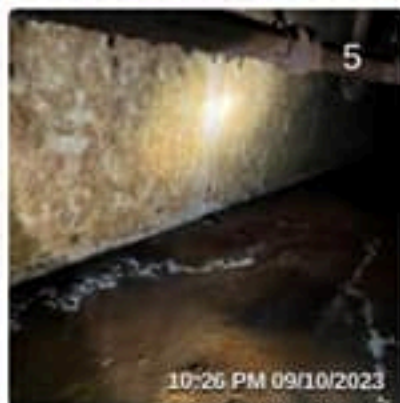
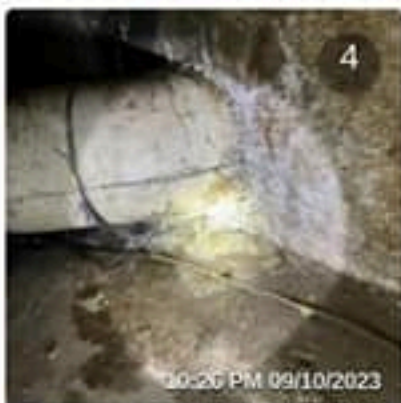
The cost amounts associated with the provided recommendations are the opinion of WTI based on a professional understanding of market conditions. Cost amounts have not been trade or contractor verified and are intended only to provide guidance for a preliminary aquatic budget.

OBSERVATIONS

Pool Vessel

Pool vessel is constructed of concrete. Staff reports leaking and significant water loss, particularly versus the previous year.

Significant efflorescence exists in the subgrade spaces of the outside of the pool vessel, indicative of moisture penetration through the pool vessel. Moisture has the potential to weaken the structural integrity of the concrete. Replacement of significant portions of the pool vessel are likely necessary within the next few years.

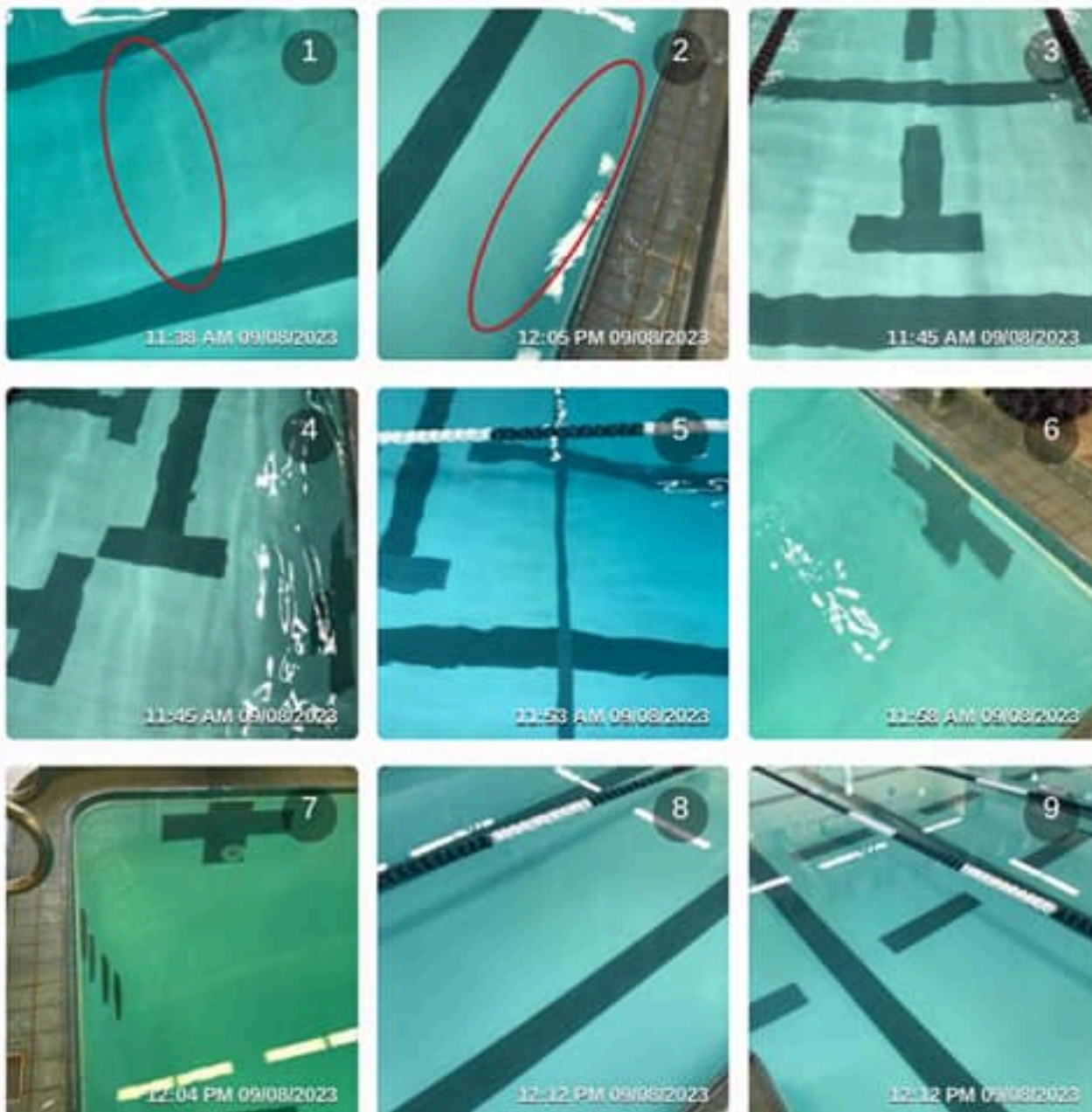


Finish

The interior of the pool is finished with a PVC liner. Several locations of the liner are rippling or bubbling, such as indicated in Images 1 and 2. Rippling or bubbling could indicate water under the liner and/or areas of leaking, particularly when at seams in the liner. Areas of rippling or bubbling will only continue to worsen if not repaired. The pool liner should be removed for replacement as well as further inspection of the interior of the pool vessel concrete.

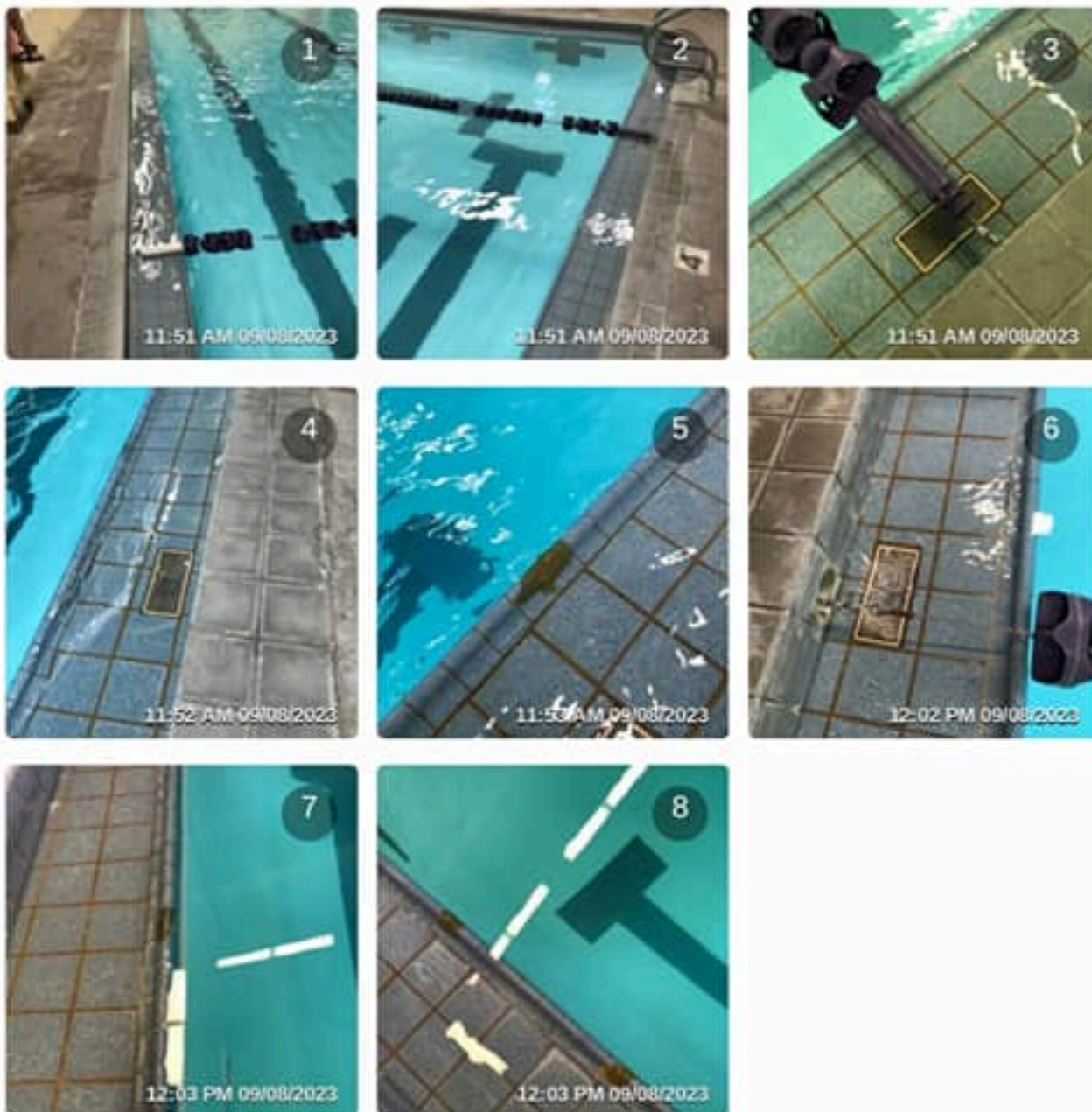
The top of the liner is adhered to the pool vessel with a thick band of "rubber", which is peeling off in at least one location.

Lane line markings, on the walls and floor, as well as floor slope transition markings, appear to be vinyl strips adhered to the liner. Slight deterioration can be seen on the lane line markings but are overall in good condition.



Perimeter Gutter

The perimeter of the pool is a trenchless rollout "gutter". This style of gutter is ineffective. The intent of any perimeter gutter is to skim the surface of the water along the entire perimeter to remove debris, oils, and other contaminants on the water surface. A small tile "lip" or handhold at the edge of the pool accomplishes the skimming action when the pool water is very calm. However, the gutter does not have a trench to gather and collect water. Therefore, any moderate user activity in the pool easily sends waves over the handhold edge and fills the gutter ledge with water, eliminating any skimming action. The small dropouts along this gutter ledge are insufficient in size and number to evacuate the water. This means anytime the pool has moderate activity the surface of the water is not being skimmed, and the dirtiest water in the pool is not being properly conveyed to the filtration system. Further aggravating this, some of the dropouts were not working and had little to no flow of water.

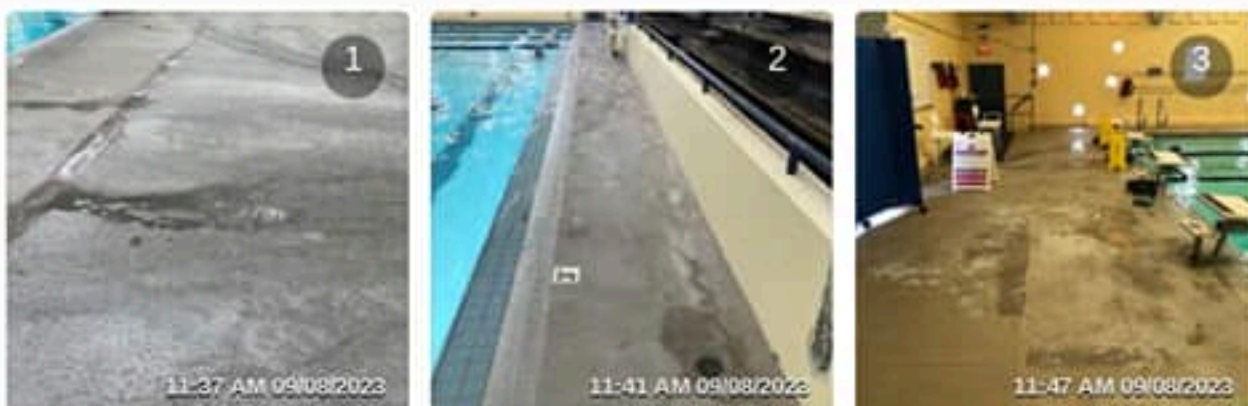


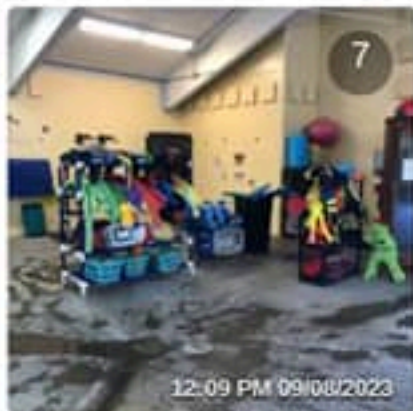
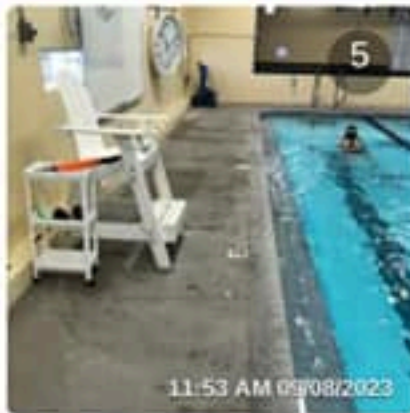
Pool Deck

Surface coating delaminating in some locations

Extremely slippery in some high traffic areas; insufficient coefficient of friction suspected.

While deck dimensions meet code minimums, the deck is rather narrow on the north (4') and west (5') sides.

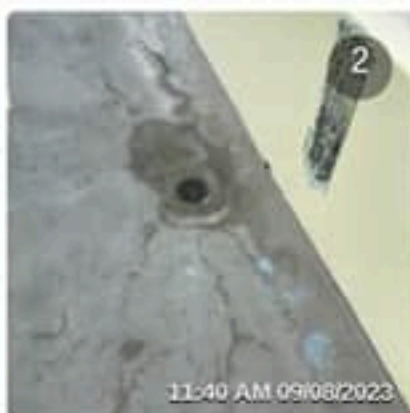
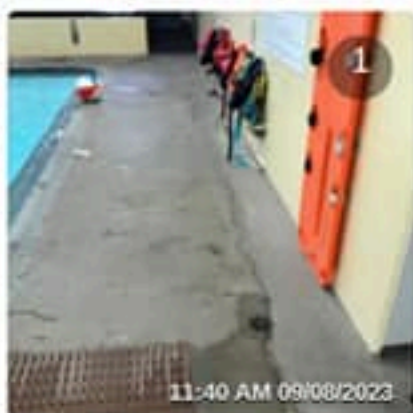




Deck drains

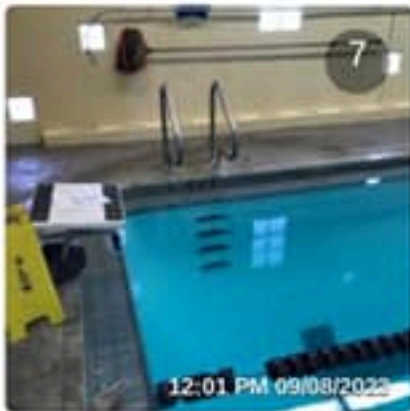
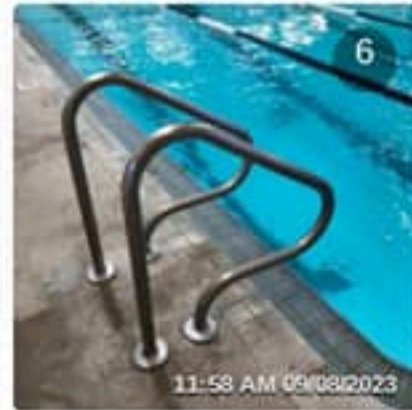
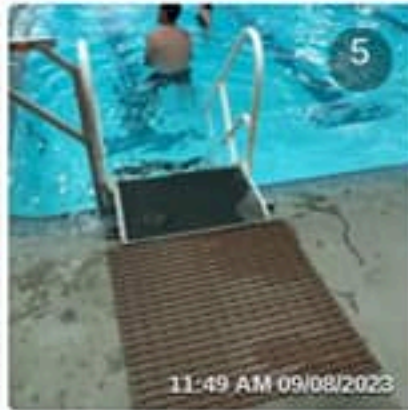
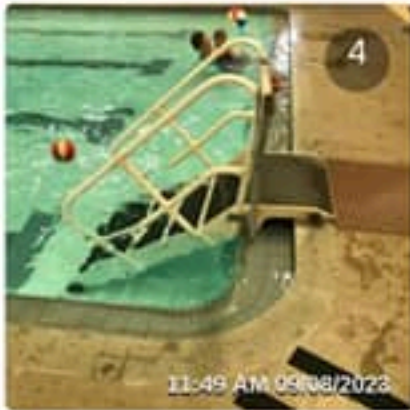
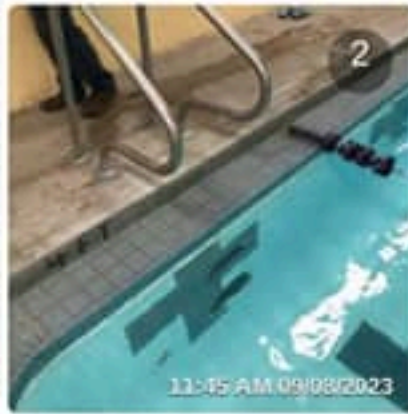
Spot drains, not sufficiently removing water from deck, areas remain wet.

Two drains near locker room entrance observed to be clogged / no operating



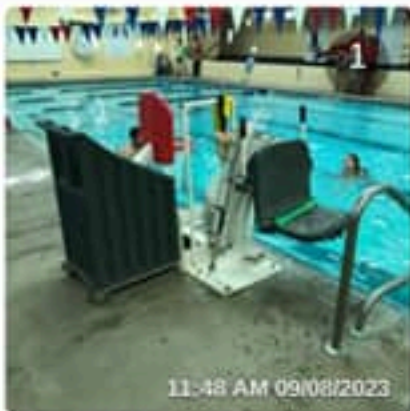
Entry/Exit

Entry to the pool via Portable Stairs or In-Wall Ladders



ADA Compliance

ADA Compliant Access provided by a portable battery powered chairlift

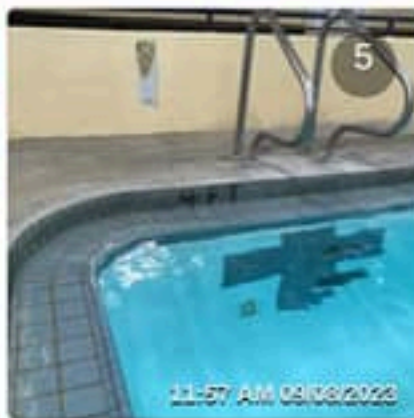
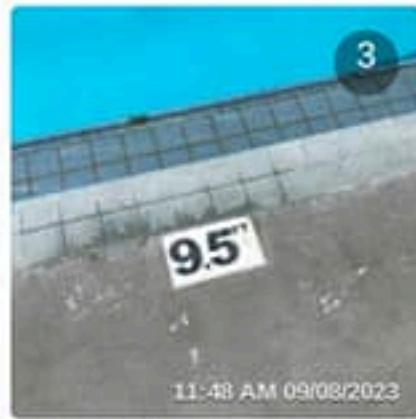
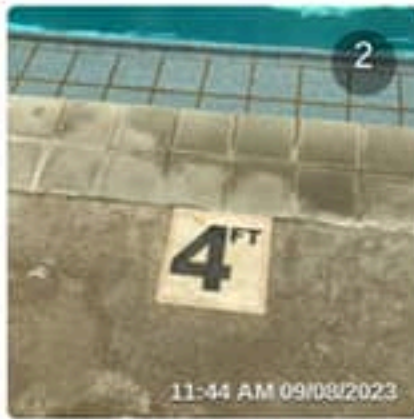


Depth Markers

Horizontal depth markers are laminate tiles on the concrete pool deck

Vertical depth markers are 1x1 tiles at the back of the gutter shelf

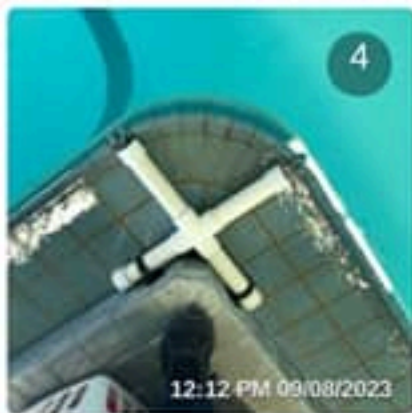
Depth markers do not exist at all deviations in floor slope as per code



Anchors And Lane Dividers

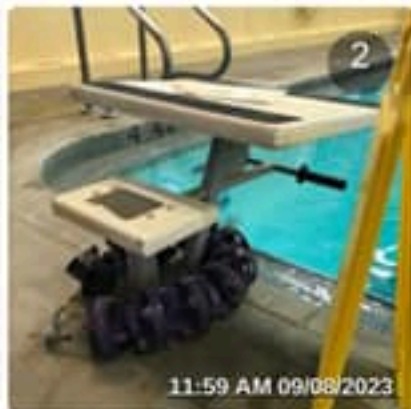
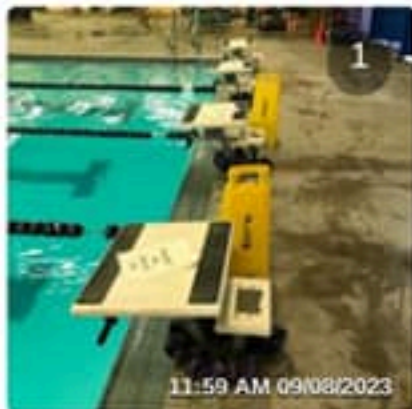
Lane dividers are attached to anchors at the back of the gutter shelf, creating a tripping hazard for anyone using the gutter shelf as a step or access point.





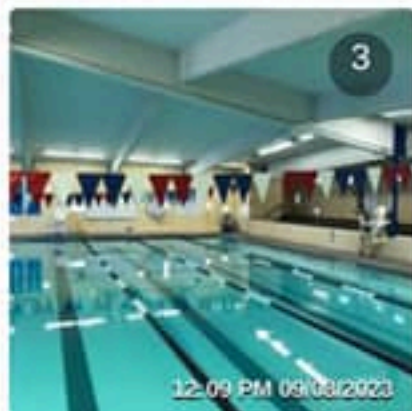
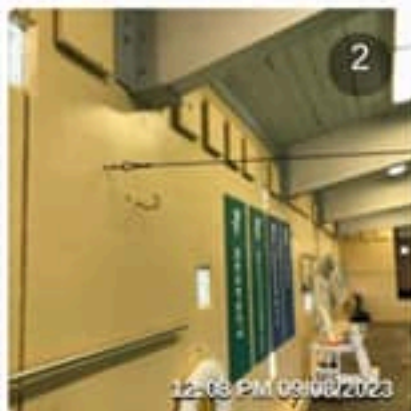
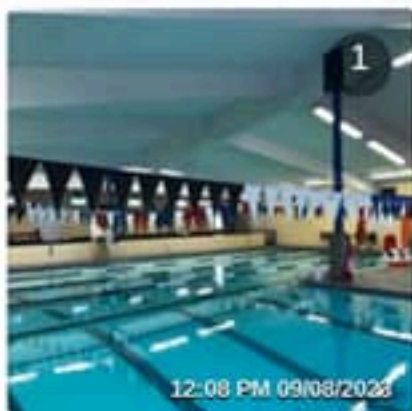
Starting Platforms

Stand support and particularly anchors are severely corroded



Backstroke flags

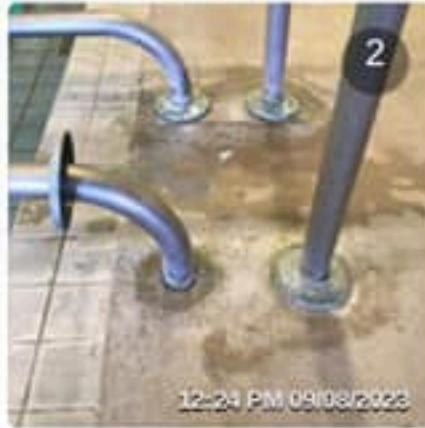
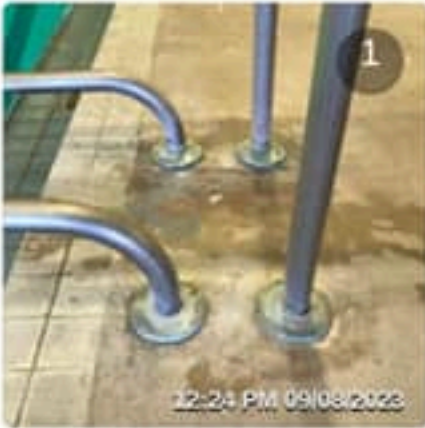
Backstroke flags for both course directions are suspended from the natatorium walls.



Handrails

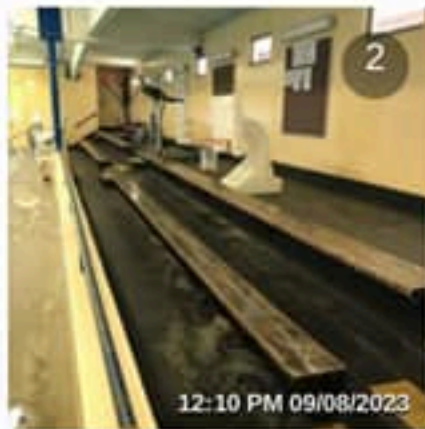
Stainless steel hardware around the pool, such as ladder handrails had medium levels of

scale formation.



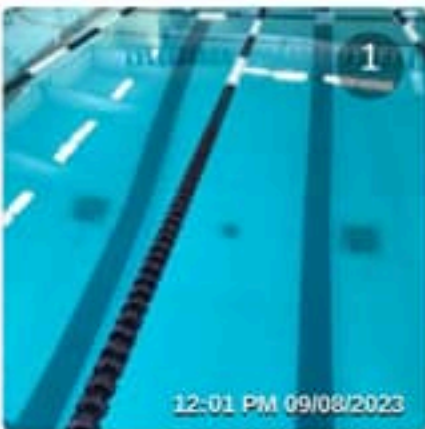
Spectator area

Spectator area is raised and separated from pool deck. Dry land workout equipment currently in space.



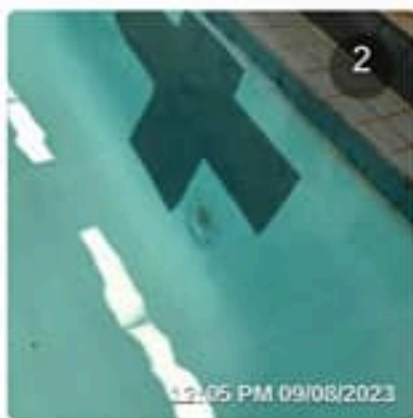
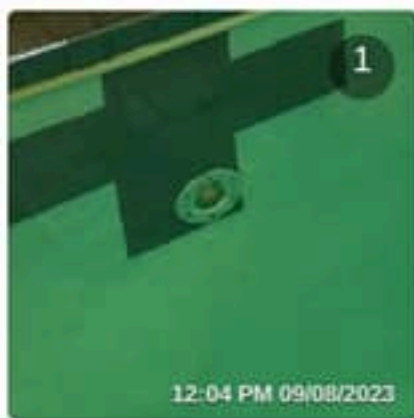
Main Drains

Main drains were visible in the deep area of the pool. Staff reports these drains are not functioning.



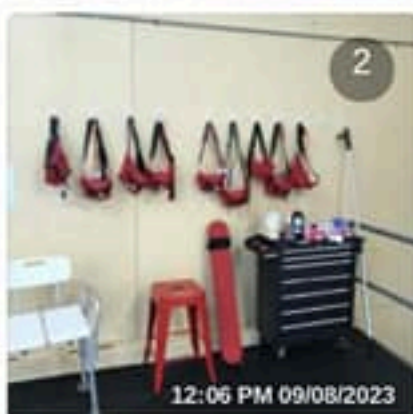
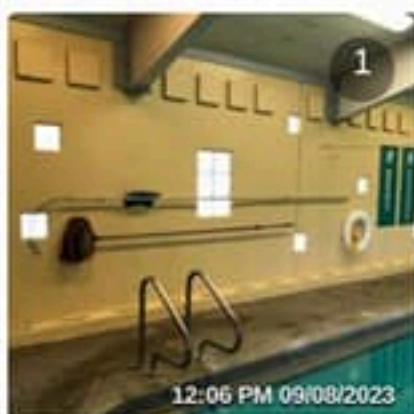
Inlets

Water is returned to the pool from the filtration and water treatment systems through side wall inlets.



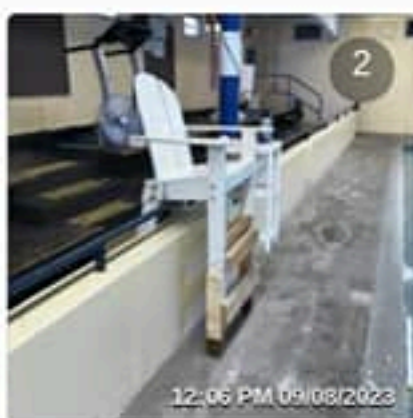
Safety equipment

Safety and rescue equipment is present, visible and accessible.



Lifeguard station

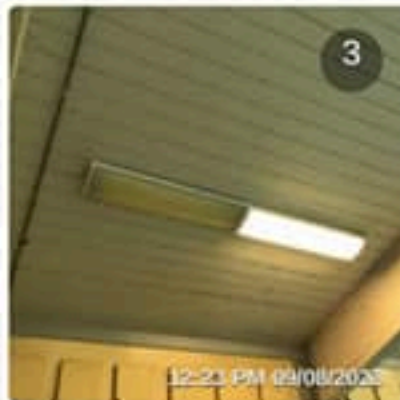
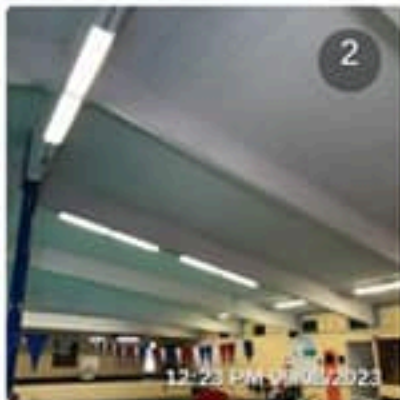
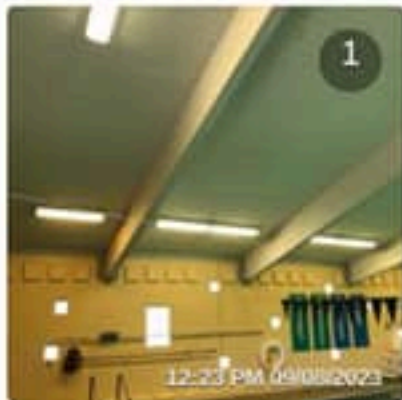
Two lifeguard chairs were present and in use



Lighting

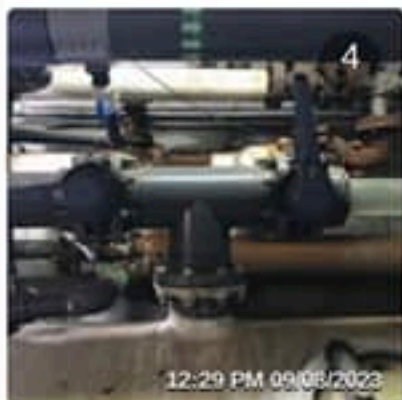
Pool does not have underwater lighting.

Overhead natatorium lighting was dim but not insufficient. Two overhead lights were observed to be out and in need of bulb replacement



Filtration

Pool is filtered with a single tank horizontal sand filter. Backwash valves are operated manually.



Piping

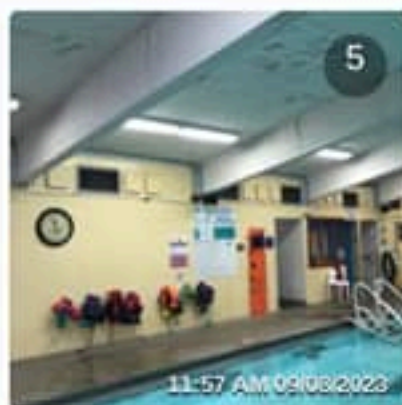
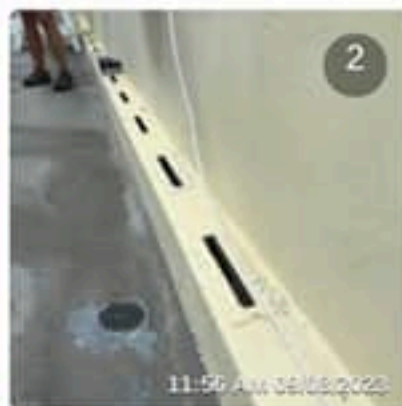
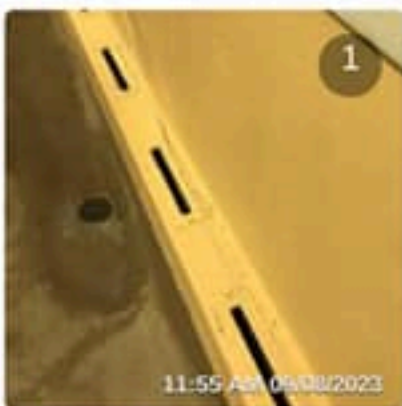
Piping in mechanical room is schedule 80 pvc and appears in good condition. Piping is well labeled.

In the subgrade mechanical chase, pipe hangers are badly corroded, and leaking water is visible.



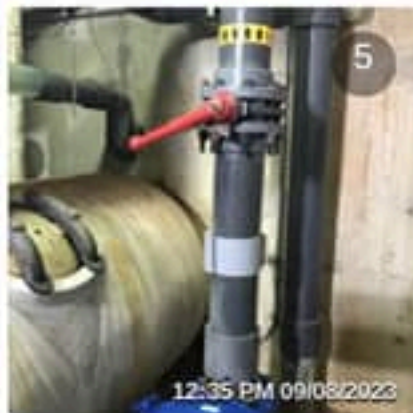
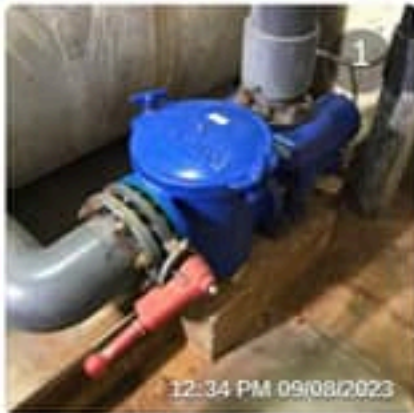
HVAC

Natatorium HVAC air distribution is generally insufficient. Air is returned to the natatorium at low, floor level locations. Air is removed from the natatorium at high, ceiling level locations; the opposite of a properly distributed natatorium. Air needs to be evacuated from the natatorium at low deck/water levels to properly remove gases and other contaminants discharged from the pool water and remaining on or about the water surface.



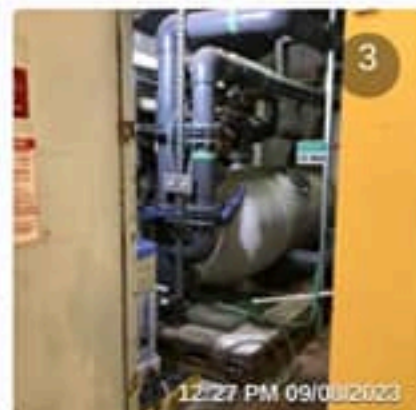
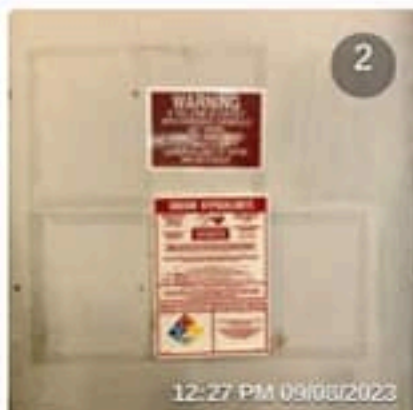
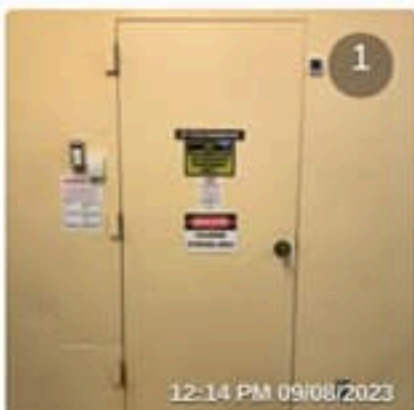
Pump

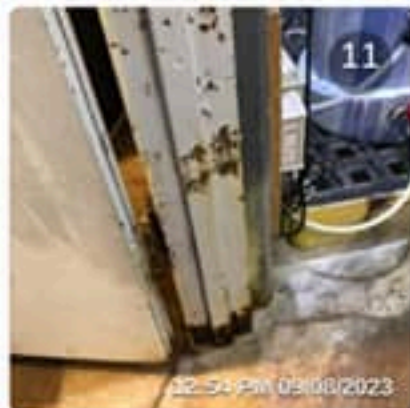
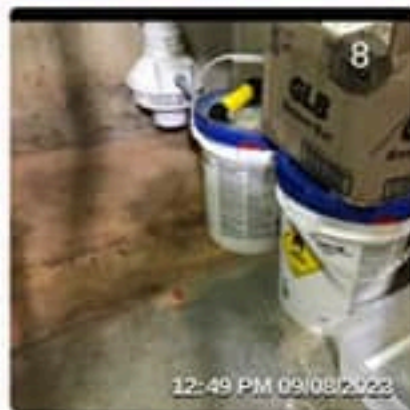
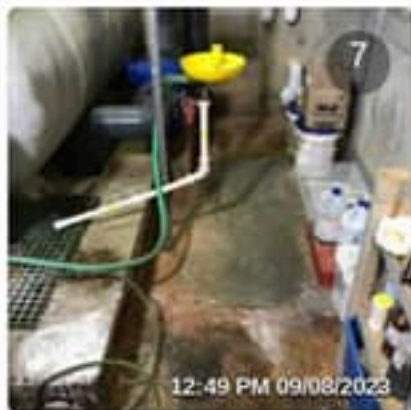
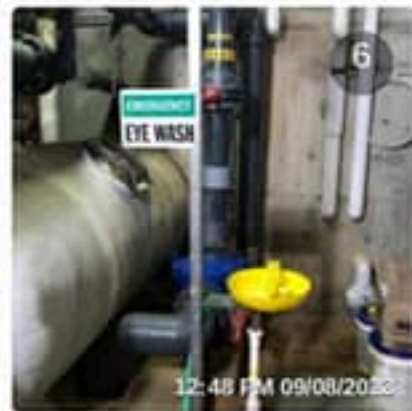
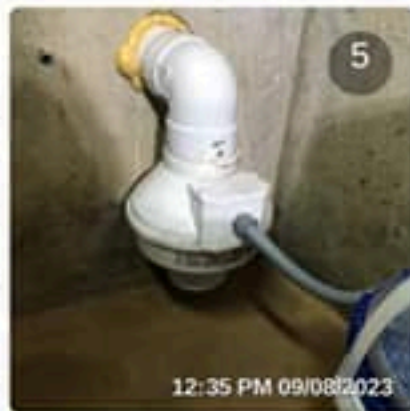
Pool water is circulated with a single 7.5 HP pump. The piping before and after the pump is partially "throttled" or closed with valves to prevent the water flowing at a faster rate than desired. This is very inefficient as the pump is running at full power and the water is mechanically block. A variable frequency drive could adjust the pump motor to run at the desired output, thus saving significant energy usage. Furthermore, the pump is a flooded suction pump installed in a non-flooded, self-priming condition. This makes starting the pump difficult and pump operating less efficient.



Chemical Storage

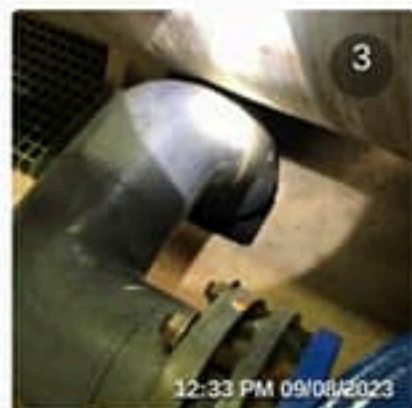
Chemicals and water treatment equipment are all comingled in the general mechanical room. Calcium Hypochlorite was present along with other common pool chemicals. There are no floor drains in this space. Metal door frames and hardware are significantly corroded in this room. Low level mechanical air venting is present.





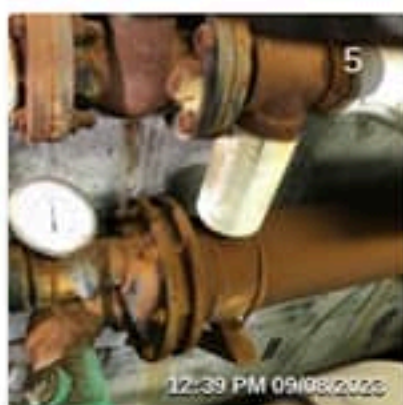
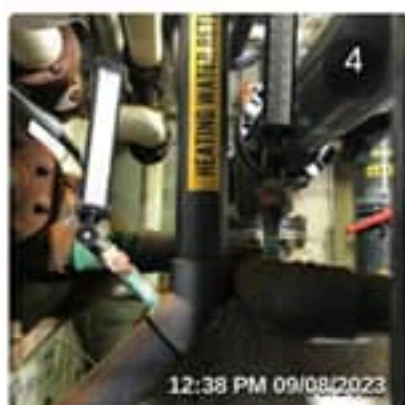
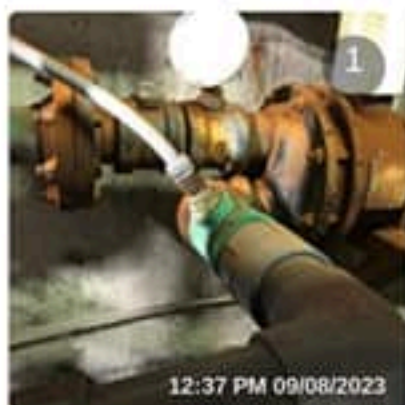
Surge Tank

Water from the pool gutters is conveyed to a surge tank in the mechanical room. The surge tank has open venting to the mechanical room, thus allowing corrosive humidity and chloramines from the pool water to enter the mechanical room. The concrete top of the surge tank is badly deteriorated with exposed and corroded rebar.



Heating

The pool water is heated via the building boiler system with a tube heat exchanger located in the pool mechanical room. The heat exchanger and associated piping and valving is badly corroded.



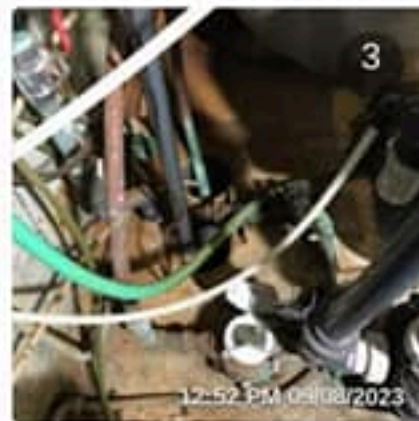
Chemical Controller

The pool water treatment systems are governed by a Strantrol ORP/pH chemical controller.



Water Level Controller

The water level in the surge tank is monitored and controlled with an electronic water level sensor.



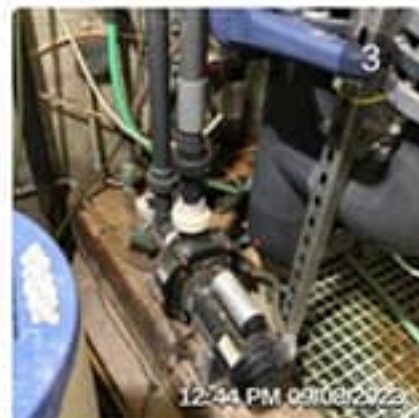
Flow Meter

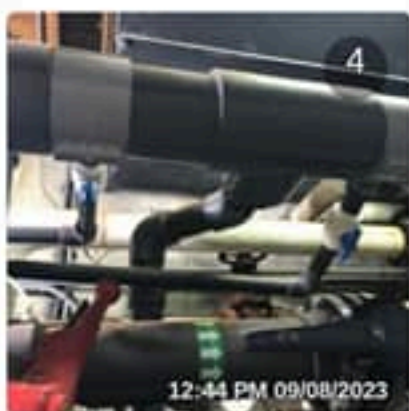
Signet flow meter measures the flow rate with a sensor located on the pressure side of the pump.



Chlorine Disinfection

Calcium hypochlorite is used to disinfect the pool with a Pulsar feeder system. Erosion feeder is placed on a spill containment pallet; however, spill containment pallet is full of clear liquid (presumed to be water) and therefore has no containment capacity. Booster pump circulates water through the feeder bypass piping and eroded chemical is injected into the circulation piping via venturi.





Secondary Disinfection

No secondary disinfection, such as Ultraviolet Radiation, exists in the current pool system.

PH Control

The pool water pH is controlled with the injection of carbon dioxide. Bulk carbon dioxide is stored in a nearby general mechanical room. Carbon dioxide controller had a difficult to read rate of flow indicator due to dirt/buildup in the sight tube. During the observation the unit could be heard switching on/off.



Testing And Supplies

A small cart with pool testing supplies and pool chemical records was present in the pool mechanical room.





DEFICIENCIES

- 1) Excessive moisture has penetrated the concrete pool vessel.
- 2) Pool liner is rippling/bubbling and leaking.
- 3) Perimeter gutter is an ineffective surface skimming method.
- 4) Pool deck coating is delaminating.
- 5) Pool deck is slippery and has poor coefficient of friction.
- 6) Deck drains fail to drain water sufficiently.
- 7) Additional depth markers are needed at floor slope transitions.
- 8) Lane dividers across gutter create a tripping hazard.
- 9) Excessive corrosion on starting platforms
- 10) Main drains are not functioning.
- 11) Bulb replacement is needed on two overhead lighting fixtures.
- 12) Piping hangers in subgrade mechanical chase are severely corroded.
- 13) HVAC air distribution is insufficient and lacks low level return.
- 14) Circulation pump is installed above grade and lacks a Variable Frequency Drive
- 15) Chemicals storage lacks separation of hazardous compounds.
- 16) Surge tank concrete is deteriorating.
- 17) Pool heat exchanger is excessively corroded.
- 18) Chlorine feed system is improperly located and lacking effective spill containment.
- 19) Absence of secondary disinfection system

RECOMMENDATIONS

Option One

The following repairs are recommended, at a minimum, to allow the facility to continue operating in an effective manner and correct the deficiencies defined above.

- **Replace Pool Liner**
Replacement of the interior pool liner with a quartz aggregate plaster finish
- **Repair Pool Vessel**
Inspection of pool vessel concrete with liner removed; repair/seal of all cracks and replacement of any area with spalling/deterioration of concrete.
- **Replace Pool Gutter**
Replacement of the existing perimeter gutter with a deck level gutter with trench and PVC grating. Also involves installation of new lane divider anchors.
- **Refinish Pool Deck**
Refinish pool deck with textured sealant or topical coating.
- **Replace Failed Deck Drains**

- Replace non-functioning deck drains and drain piping.
- Replace Starting Platforms
Replace all starting platforms and platform anchors.
- Replace Main Drains
Replace main drain sumps, gratings, and piping.
- Replace Pipe Hangers
Replace all corroded pipe hangers.
- Install Additional Air Returns/Exhaust
Install low level air returns and/or source capture chloramine exhaust in the deck or gutter
- Install VFD
Install a Variable Frequency Drive on the circulation pump.
- Construct Separate Chemical Room
Construct a separate chlorine storage room from calcium hypochlorite storage and feed system location with proper spill containment.
- Install Ultraviolet
Install an ultraviolet disinfection system for chloramine reduction and additional pathogen protection.
- Repair Surge Tank
Repair deteriorating concrete on surge tank.
- Replace Heat Exchanger
Replace pool heat exchanger and associated piping.

Opinion of Probable Cost of Option One:

Hard Costs:	\$2,300,000 USD
<u>Soft Costs (25%):</u>	<u>\$575,000 USD</u>
Total:	\$2,875,000 USD

Option One cost amounts address the aquatic discipline only, such as the pool vessel, pool piping, and pool mechanical equipment. Deficiencies and necessary repairs to the building or building systems are not addressed in this report. During the site visit there were numerous deficiencies observed in the locker room, building structure, support areas, and building mechanical systems which, while beyond the scope of this report, would be necessary to address with any renovation.

The construction schedule to perform these repairs is estimated to be approximately 4 to 8 months. During this time the existing facility would be closed and inaccessible to the public.

Option Two

The previously discussed recommendations are necessary to maintain the aquatic components of the facility in proper working order. When a significant capital investment is considered for components of an asset, the cost to replace the complete asset is often a valuable comparative consideration. Therefore, an estimated probable construction cost for the complete reconstruction of the pool, pool deck, and associated pool systems with newly a constructed pool vessel, pool piping, pool deck, deck drainage, and pool mechanical systems is provided below. The newly constructed pool vessel will be designed and engineered to modern standards of quality and compliance and be supported by today's advanced mechanical, filtration and water treatment systems.

The location of this new pool vessel would be in the existing natatorium. Therefore, this option does not address or remedy any failings or deficiencies of the natatorium or building.

New Lap Pool, approximately 3,400 SF

- Water Depth: 0'0" to 10'0"
- Quartz Aggregate Finish with Tile Border and Markings
- Deck Level Perimeter Gutter
- Four Lap Lanes with Starting Platforms
- Shallow Water Program Area

Opinion of Probable Cost of Option Two:

Hard Costs:	\$2,800,000 USD
Soft Costs (25%):	\$700,000 USD
Total:	\$3,500,000 USD

Option One cost amounts address the aquatic discipline only, such as the pool vessel, pool piping, and pool mechanical equipment. Deficiencies and necessary repairs to the building or building systems are not addressed in this report. During the site visit there were numerous deficiencies observed in the locker room, building structure, support areas, and building mechanical systems which, while beyond the scope of this report, would be necessary to address with any renovation.

The construction schedule to construct a new pool vessel in the existing natatorium is estimated to be approximately 6 to 10 months. During this time the existing facility would be closed and inaccessible to the public.

Conclusion

There is a significant investment required to provide aquatic amenities to the community which are maintainable long-term. However, lower levels of capital inputs for repairs or renovations in the short-term often result in higher total expenditures in the long-term. This report finds the Port Townsend community would be best served, both programmatically and financially, with a new aquatic facility. A modern aquatic center can provide the durability and efficiencies to enable a more effective and sustainable facility over a lifespan measured in decades than the existing facility after repairs and renovations.

Furthermore, the construction of completely new pools provides an opportunity to refine the facility's ability to accommodate users. The program offerings of new aquatic amenities can meet and exceed those available in the current facility. New aquatic amenities allow separate bodies of water, new features, and a wider range of programs resulting in increased community participation. For example, a new competition pool and a new recreation pool, as separate bodies of water, allows two different water temperatures and greatly enhances the ability to hold concurrent program events. A new aquatic facility allows for the reconsideration of the aquatic program offerings and realignment of how to best serve the needs of the community.