

Cordova, Recreation & Park District Cordova Community Pool Evaluation



May, 2014

*Prepared by:
Aquatic Commercial Consulting
Richard A. Young, Aquatic Consultant
800-660-5202 // richy@aquacom.us*

Preface:

This report has been prepared to provide staff information about the overall condition of the municipal pools at the Cordova Community Pool. Areas of evaluation included the decks, pool vessels deck equipment, mechanical systems and related items with respect to: Abbreviations for the various items are listed and used in the report.

California State Health & Safety Codes: CHSC
Federal Virginia Baker, Pool and Spa Safety Act: PSSA
Article 80, Uniform Fire Code: UFC
National Plumbing Code: NPC
National Electrical Codes: NEC
Occupational Safety Regulations: OSHA
Seismic Standards: SS
National Swimming Institute Guidelines: (Industry Standards): IS
National Energy Standards ES
American Disabilities Act: ADA
National High School Athletic Associations: NHSF and NASO
Consumer Product Safety Commission: CPSC

Although this report does not address every aspect of the pool construction and operation, it does evaluate the facility with respect to the current codes and regulations listed above as well as:

Operation Cost Effectiveness
Labor and simplicity of operation
Present condition and useful life.

This report provides information on areas that fall short of the above listed codes, regulations and guidelines. Additional information concerning areas of compliance is also provided. Some might view this as a “negative” report, however, our purpose here is to help raise awareness concerning especially code related issues as well as other areas that will help the facility operate more safely and efficiently.

The information for this report was obtained through staff interviews and on-site inspection completed in March, 2014 and was followed by research with local swimming pool suppliers and contractors.

Photos of various items and issues are included where appropriate.

Some items apply to the entire facility and are not divided into separate pools.

Cost Estimates:

All cost estimates have been rounded up to the nearest \$100.00

Summaries of cost estimates are rounded up to the nearest \$1,000.00

Cost estimates for major renovation work include design costs, permits and prevailing- wage pay rates. Cost estimates are calculated to be good through 2015.

History:

The pool entry and exit areas have changed and is for the most part, are ADA compliant.

The main swimming pool was originally constructed in the early 1960's with a major renovation to resurface all the pools with fiberglass approximately ten years ago. There have been new deck equipment such as starting platforms and a new handicapped lift also purchased in recent years. The pool abandoned the gas chlorine system over 10 years ago to liquid chlorine feeders. In addition, the pools have been fitted with Virginia G. Baker compliant drains.

This facility serves the community in a number of aquatic capacities, lessons, swim team and public and family swim and rentals; however, the diving pool has been empty for several years because of leaks and is fenced off. The wading pool has been abandoned, fenced off , filled and covered with concrete.

The report from Western Water Features was provided to me, which encompassed a leak detection company's investigation.

Staff reports the existing lap and training pool also leak considerably and water must be constantly added.

The decks are "tired". Several sections have been replace, several drains do not work and many areas present safety and code compliance issues. There are several deck equipment issues.

The Bathhouse (dressing rooms and bathrooms) are open air and have been made compliant with new ADA compliant bathroom fixtures and benches. The overall condition of the various buildings, including the office, staff and coach areas and are reasonably spacious and adequate.

REPORT CONFIGURATION

Section I. Deck and Deck Equipment

Section II. Pool Vessels

Section III. Pool Mechanical Systems

Section IV. Chemical Control and Feed Systems

Section V. Entry, Bathhouses and Other Issues

Section VI. Cost Estimate Summary

Section VII. Executive Summary

Hagan Aquatic Center

General Pool Data:

Lap Pool:

Perimeter: 282 linear feet
Surface Area: 4,250 Sq. Ft.
Volume: 134,000 gallons
Required flow rate: 372 GPM for a 6 hour Turnover
Surface Collection: Custom coping stone gutter with splash ledge
Filter Type: Vacuum Diatomaceous Earth
Sanitizer: Liquid Chlorine
pH Control chemical: Muriatic Acid, hand dosed
Heating System: Natural Gas

Training Pool: NOTE: Lap and Training pool share mechanical equipment

Perimeter: 183 linear feet
Surface Area: 1,830 Sq. Ft.
Volume: 35,000 gallons
Required flow rate: 98 GPM for a 6 hour Turnover
Surface Collection: Custom coping stone gutter with splash ledge
Filter Type: Vacuum Diatomaceous Earth
Sanitizer: Liquid Chlorine
pH Control chemical: Muriatic Acid, hand dosed
Heating System: Natural Gas

Diving Pool: (Presently empty)

Perimeter: 234 linear feet
Surface Area: 3,150 Sq. Ft.
Volume: 200,300 gallons
Required flow rate: 560 GPM for a 6 hour Turnover
Surface Collection: Custom coping stone gutter with splash ledge
Filter Type: Vacuum Diatomaceous Earth
Sanitizer: Liquid Chlorine
pH Control chemical: Muriatic Acid, hand dosed
Heating System: Natural Gas

Section I. Deck Related Issues

General: The pool deck appears to be original and is showing areas of stains and discoloration from water deposits in addition to unsightly areas where concrete patches have been placed or deck anchor work completed. Some areas have been replaced and there are several different surface textures. The total deck area exceeds 40,000 square feet which is over five times larger than most aquatic venues. There are no dividing fences separating the various pools.

Deck Surface:

- A. There are number of deck areas with unsightly stains or failed concrete areas. Several areas present a trip hazard and are not in compliance with CHSC. PP-1, 2
- B. Several deck areas have wood screeds that have rotted or have become depressed again, presenting a trip hazard. Many have been replaced with concrete. CHSC, PP- 2, 3
- C. The expansion joints throughout the deck have failed. PP- 4, 5
- D. There are abandoned in-deck light junction boxes that remain along with old racing starting platform anchors which are well below the deck surface and present a trip hazard. CHSC, PP-6
- E. There are several areas where the deck and the pool edge coping stones are not the same elevation and present a trip hazard. CHSC, PP-7
- F. Staff reports a numerous areas around the deck will have standing water. There are various area deck drains with various slopes to various deck sections. Standing water is not compliant with CHSC. PP-8

PP-1 Failed Deck Areas



PP-2 Deck Sections, Replaced Screeds



PP-3 Old Wood Screeds at Entry



PP-4 Failed Expansion Joints



PP-5 Failed Expansion Joints -2



PP-6 Abandoned Deck Anchors Boxes and Expansion Joint



PP-7 Trip Hazard at Pool Edge Coping, Failed Expansion Joint, Leak



PP-8 Standing Water



Ramps and Step Area Issues:

- G. The ramp on the north side of the lap pool has a 6% slope. CHSC and Federal ADA call for no more than a 1% slope. This ramp also has a considerable ledge of near 1". PP-9
- H. The ramp between the lap pool and the diving pool has a slope near 7% and falls well short of CHSC and Federal ADA. Code. PP-10
- I. The deck ends with an unprotected curb behind the bleachers with a near two foot drop off. The ledge between the lap pool and the diving pool does have a protective rail. The curb is breaking down and steel rebar is exposed. PP-11
- J. The step areas adjacent the ramps described above must have rails on both sides to comply with Federal ADA and building code. PP-10

PP-9 Slope on Ramp, Ledge



PP-10 Steps without rail, Ramp too steep



PP-11 Unprotected curb and ledge, Deck Cracks, Exposed Steel



Deck Equipment and Other Issues:

- K. The starting platforms are 30” off the pool water level and require a minimum of six feet of depth beneath them per industry standards and NHSA and NASO. These platforms are not covered and staff reports they are not removed during public swim. CHSC calls for racing lane platforms to be either removed or covered when not in use. PP-12
- L. The lifeguard stand for the lap pool does not meet OSHA standards, as it requires the Lifeguard to climb over the chair to reach the seat. (Dive pool has OSHA type) PP-13
- M. The bleachers on the north side of the lap pool have bolts protruding above the bleacher seats that present a safety hazard and are not CPSC compliant. Other bleachers have wood seats and foot walks that have peeling paint and are unsightly. PP-14
- N. There are several hose bibs both above ground and in the deck that are not protected by anti-siphon devices as called for in CHSC. PP-15, 16
- O. Most of the deck signage, both depth markers and no diving signs are faded and no longer contrast with the surrounding deck as called for in CHSC. PP-17, 18, 19
- P. The pool light junction sits approximately 4 inches above the deck. This box falls short of the 8” minimum height above grade per NEC. PP-20

- Q. The ladder hand rails are missing the escutcheons that cover the wedge anchor. One rail is loose. PP-21
- R. The pool safety, information, emergency information and pool capacity signs are scattered around the pool deck rather than being posted in a conspicuous location near the entry. Most of the signs are faded. They do not comply with the CHSC.
- S. Overall the amount of shade for the deck is limited. (See also Section V Other Issues)
- T. The Handicapped lift meets the new Federal Disabilities Act, however, once the diving pool is opened and second lift will be required.

PP-12 Non-Compliant Starting Platforms, Deck Cracks, Faded Depth Markers



PP-13 Non-Compliant Lifeguard Stand



PP-14 Bolts Protruding on Bleachers



PP-15 Non-Compliant Hose Bibs (in deck)



PP-16 Non-Compliant Hose Bibs



PP-17 Faded Deck Signage



PP- 18 Faded Rules Sign



PP-19 Faded Safety Signs



PP-20 Non-Compliant Pool Light Junction Box



PP-21 Missing Escutcheon, Cracked Coping Stone, Faded Depth Marker



Summary and Recommendations:

Concrete Deck:

Long Term:

The number of issues concerning the deck are many. The entire deck is a patchwork of various concrete slabs, surface textures and types. In light of the poor drainage, many abandoned deck anchors and junction boxes, cracks, tripping hazards, failing screeds, concrete patches, faded deck signage, ramp non-compliance and failed expansion joints, repairs to solve these issues would be “patch-work-like” at best.

It is my recommendation, the entire deck be reengineered and replaced with new deck drainage, deck signage, deck anchors, compliant ramps and proper rails.

Since a major renovation (see pool vessel section) is absolutely necessary, much of the deck would be demolished for plumbing work and have to be replaced with considerable patching.

It may be worthy to note that the overall size of the deck area is well oversized for even a large swim meet or other activity. A new deck configuration cutting the deck by as much as 50 to 75% would be desirable. This would lower the concrete replacement cost considerably. However, it is important to keep in mind the care of concrete as opposed to the ongoing cost of grass is measurably less.

Estimated Deck replacement:

Design, removal, and replacement, including new deck drainage:\$10 per square foot:	\$400,000
Install new deck anchors, light conduits, bonding etc.	\$ 18,000

Short Term:

In light of a complete new deck not occurring even within the next year or so, there are several issues that should be addressed immediately since they are code related and present the largest liability and risk:

They include:

-Eliminating or minimizing tripping hazards (concrete patches, ledge grinding etc.)	\$ 2,000
-Install new ramps with proper slopes to comply with Federal ADA.	8,000
-Revitalizing deck safety signage (even painted signs)	500
-Install anti-siphon devices on the hose bibs	300
-Move or replace the underwater junction box to be compliant	200

NOTE: Many of these items can be accomplished in house.

Estimated Short Term Repairs: \$14,000

Deck Equipment:

The two larges code-related issues are the non-compliant lifeguard stand and the competitive starting platforms. Both require replacement.

Estimated Costs:

New OSHA lifeguard tower:	\$ 2,000
New starting platforms that do not exceed 18” in height above the water, including anchors:	\$10,000
New diving pool handicapped lift:	\$ 5,000

Other issues:

-Repair to the bleacher bolt	Nominal
-Tighten the hand rail and replace escutcheons	\$ 200
-Install Hand rails on ledges and steps.	\$ 3,000

Estimated Deck Equipment Issues: \$ 21,000

Section II. Pool Vessel Related Issues

General: The lap pool has eight lanes and the diving pool has six lanes for competitive and lap swimming and staff report they meet most of the recreation and competitive needs. All the pools were constructed with a custom gutter configuration that falls short of the surface water gathering capacity the pools should have and the “step-down” gutter configuration does not meet current CHSC code.

With the elimination of the wading pool, the training pool does not meet the needs of the “little people” (5 years and younger). The training pool is a great venue for teaching swimming, but has no access for the physically impaired.

The diving pool has been drained due to large leaks and has not been used for three years. Staff reports considerable leaking from the lap and training pool.

The bottom drains have been retrofitted with Federal Virginia Baker approved bottom drains however, the training pool has only one bottom drain.

The vessel interior water barrier (the fiberglass) is in reasonable shape and even with the possibility of some minor patching, should last for several more seasons. This fiberglass is approximately ten years old, however, from what we could examine from the deck still appears to provide the water barrier job it was intended for at installation.

However, the unique gutter system expansion and caulk joints can be serviced to reduce the overall water loss on both the lap and recreation pool. Careful inspection of cracks should be completed and all cracks filled with water-proof epoxy.

The vessels structural integrity itself appears to be in adequate shape to serve the District many more years once the plumbing is replaced. There are no indications of vessel shifting at the expansion joints or at the surface gutter expansion joint around the pool.

Replacement of the copper plumbing with PVC will require considerable “tearing up” of sections of the pool vessels, however, properly installed and treated new reinforcement steel and high-strength concrete (shot-crete) can replace the sections removed and not sacrifice the vessel’s structural integrity.

Gutter, All Pools:

- A. The gutter is constructed poorly, but was an early attempt at a perimeter gutter system using a “coping” stone-ledge configuration. Since the coping stones are porous, and in light of the design, it was probably only a matter of time before leaks would become evident.

Presently, the gutter drains use a 4” x 10” slotted drain only capable of approximately 18 gallons per minute gravity flow. The flow is significantly reduced with only a few leaves on the exposed grates and often will restrict the surface water collection percentage

required for surface water collection.

At the time of our inspection, it was evident water was leaking behind the gutter and onto the deck. I suspect, additional water is being lost through the various grout and caulk joints that make up the gutter. The gutter stones are well pitted and very rough,

The “step-down” design falls is non-compliant with the CHSC and presents a trip hazard. There is a 4” elevation drop from the deck to the gutter edge. Several of the gutter stones are cracked PP-22, 23

The gutter design does not accommodate the quelling of wave action resulting from competitive swim activities such as a rollout or cantilever gutter type.

PP-22 Gutter Configuration, Drain, Crack in Coping Stone



PP-23 Gutter Configuration “Step Down”



PP-25 Pool Leaking Through Gutter



Pool Vessels:

- B. Overall the interior fiberglass surface appears in reasonable condition, especially for being ten years old. However, the bottom racing lines on the lap pool are well faded and need replacement. NOTE: The photo was taken at a time when the shadow of the racing lane divider happened to fall on the bottom racing lane. The racing lane is almost completely gone) PP-26

PP-26 Faded Racing



- C. The quantity of return floor inlets appear to be adequate for the flow, however, the supply copper plumbing integrity is highly suspect due to the considerable water loss. (See also Water Chemistry and Chemical Control section). Copper was considered the best available water carrier during the pool's construction period, however, years of using chlorine gas with possibly marginal chemical control appear to have taken their toll on the plumbing integrity.

Staff reports a considerable water loss of several inches per day to the lap and recreation pool (the plumbing and recirculation systems are connected).

The pool plumbing and mechanical system is shared between the lap and training pool. This does not meet current CHSC or industry standards.

Gas chlorine creates hydrochloric acid as a byproduct and the pH must be constantly monitored and neutralized with soda ash or caustic soda and maintain the water's total alkalinity and calcium hardness to avoid a corrosive water condition. The lack of any type of automatic chemical control made this job very difficult. Over time the copper is lost to chemical corrosion and pin-hole leaks developed.

- D. The training entry pool steps have sharp corners that can present a safety hazard if someone were to fall and does not meet CHSC and industry standards.
- E. The training pool has no ADA compliant entry. It is too shallow for a pool lift and has no ramp to comply with Federal ADA law.
- F. Many of the racing lane dividers are connected to mild steel hooks that show considerable signs of corrosion. Failure of one of these hooks with tension on the racing lane line could result in an injury to a swimmer.
- G. Staff reports the underwater lights are in good working order and the lap pool lights are connected to a proper GFCI breaker.
- H. The training pool light appears to not be connected to a GFCI breaker and is non-compliant with CHSC, and NEC.
- I. The lap pool and diving pool have been retrofitted with new state and federal bottom drains.
- J. The training pool has only one bottom outlet and falls short of both Federal VGB and State AB1020 code.
- K. The diving pool is fitted with very unique underwater viewing windows. Although they were covered to protect them during this inspection, staff reports they do not leak and are visited by a number of observers. It may be worthy to not the ramp access to the underwater windows does not meet ADA, however, this may be exempt.
- L. The training pool does not have a compliant entry for the physically impaired and falls short of Federal ADA laws. In addition, there is really no place for small children under the age of six to play.
- M. The diving pool has several drains that appear to be outlets, however, staff reports there is only one main drain. This falls short of both Federal VGB and State AF1020 code.

Summary and Recommendations:

Long Term:

In light of the pool history of having been constructed with copper plumbing, the diving pool abandoned for water loss and the lap and training pool losing a considerable amount of water, the only real solution is to re-plumb all the pools with new PVC plumbing and eliminate the bronze bottom returns with cycolac plastic returns to eliminate all metal from the plumbing.

The non-compliant gutter configuration and design need to be replaced with a new gutter.

There are several options including a stainless steel gutter system or roll-out (rim flow) gutter. See PP-27, 28

The replacement of the gutter should coincide with the deck replacement in order to achieve the proper deck to water elevation and much of the deck would be removed for plumbing Installation.

The training pool does not have the proper ADA access and facility, since the closure of the wading pool, does not have a place for toddlers to play. Both can be solved by re-constructing the wading pool at the wide end to include a zero-depth entry.

Staff also desires some modest “play structures” such as a “mushroom” fountain, water spouts etc.

One possible alternative that should be investigated with the County Health Department is the use of a stainless steel gutter. Some agencies will allow the top edge of the pool vessel to be replaced with these innovative gutter systems which not only collect surface water from the pool but can provide the water return chamber without cutting out sections of the pool bottom for new return plumbing. A variance would be needed for such work. The average complete cost of a stainless steel gutter system is approximately \$190 per linear foot, but this falls well short of reconstructing the entire pool perimeter with a new rim-flow or cantilever gutter system formed from new steel reinforcement, concrete and tile, not to mention the pool bottom cutting, installation of plumbing and reconstruction. A savings between \$50,000 and \$100,000 could be realized.

Inquiries have been made with the County for possible approval.

Estimated Costs:

Re-plumb all three pools with PVC and new returns and bottom drains:
This would involve cutting into the existing vessel floor and will result in the pool interior also being replaced:

Re-plumbing:	\$470,000
Install new gutter system:	\$180,000
Resurface pools:	\$350,000
Re-construct training pool with zero-depth entry and play structures:	\$ 80,000

Long term estimated costs: \$ 1,080,000

Short Term:

Some caulking could be completed to help with the water loss from the gutter as well as cracks filled, however, there is really no viable short term solutions to the water loss or gutter issues.

In addition, the lines on the bottom of the lap pool could be re-painted with Fiberglass and if necessary misc. patching could be completed if needed.

Estimated Costs:

Caulk cracks and seams in gutters:	\$2,000
Repaint lines and targets	\$3,000
Patch fiberglass tears	\$4,000

Section III. Pool Mechanical Systems

General: The overall pool mechanical room is antiquated with little or no-state-of-the-art equipment in use. Although structural integrity of buildings is not part of this report, the building itself does not appear to meet the California Seismic Safety Commission Field Act.

The lap pool and training pool share a filter system, which falls short of the CHSC and industry standards. Each pool is required to have its own separate recirculation pump, filter, heater and chemical control/feed system. There are no labels on valves, equipment or direction of flow arrows on plumbing. The heater shows significant signs of overheating. There are no chemical warning placards or signs, not double containment of chemicals. The mechanical room is very messy and un kept.

Staff reports that the pool has been maintained by an outside pool service. It is my experience there a very few experienced service companies capable and knowledgeable enough to maintain a pool of this size and with the significant maintenance demand. This pool requires daily attention even if it was fully automated.

Mechanical Equipment:

- A. Pool pumps are part of the vacuum diatomaceous earth (E.E.) filter system: These 10 HP Berkley pumps are standard efficiency and operate at around 75-78% efficiency. premium efficiency pump motors and operate at approximately 78-80% efficient.

Neither motor is bonded per NEC and CHSC code.

These pumps are not fitted with any “slow start” or Variable Frequency Drive controls and therefore draw “spike” power levels when first started per industry standards

They are sized for the vacuum D.E. filters, but will need to be replaced for use with any new high-rate sand filter staff desires.

The one pump shares the recirculation flow between the lap pool and the training pool and does not meet current CHSC. The other pump services the diving pool only and is not in operation.

- B. The vacuum D.E. filters remain viable, but are very labor intensive, especially in light

of the absence of any D.E. Slurry system. Staff reports having to clean the filters every three days or so during the swim season. A slurry system adds a small amount of D.E. to the filter to extend the filter runs measurably (four times more than present). It involves a tank, slow-speed mixer and slurry pump. PP-27

The D.E. filters elements are appropriately sized to handle the flow for the swimming pools. The “filter pits” are adequately sized and fitted with proper “surge quelling” barriers. Staff reports several D.E. element covers have failed for the lap/training pool, however, they can be “robbed” from the diving pool which is not in use. Staff strongly desires new high-rate sand filters for all the pools. The space is available and the overall maintenance cost is much less. The sewer connection appears to be large enough, however, a backwash tank will probably be required to handle the overall flow.

The one D.E. filter in use services both the lap pool and the training pool and does not meet current CHSC. The other filter services the diving pool only and is not in operation.

- C. The water level in the pools is controlled by the manual fill system which delivers water to the surge/filter pits. At the time of our inspection the pools were overfilled, however, The surge pits are not fitted with proper “modulating float valves” to help insure the water level in the pits remain mostly empty to allow for maximum flow from the pool gutters to the pit. Industry standards call for an automatic fill device.

There are two surge pits, one services the diving pool the other the recreation and the lap pool. This does not meet current CHSC or national standards.

- D. The pool heater that was operating shows significant signs of overheating as the paint has peeled off and many wires are scorched. The maximum efficiency of this unit even when new was 78% and in its present condition probably closer to 60%. When the heater came on the heat radiating from the heater body was frightening. Many wires are exposed. PP-28, 29

- E. The control valves for the surge/filter pit are not labeled and are significantly corroded and are fitted with various makeshift handles. Staff reports the valves are difficult to operate. PP-30

- F. The electrical panel is not properly labeled for the most part. The pool sub-panel is rated for 150 A. The training pool breaker is not GFCI as required by CHSC and NEC. There are several other panels in the room the supply other areas and equipment. PP-31

- G. Several sections of the plumbing are not appropriately supported with braces or hangers with one section using a wedged piece of wood. This falls short of OSHA, CHSC and local Seismic standards. PP-32, 33

- H. The surge pits and pump pits are not protected with any safety railings. There are sections of unsecured, cut-up diving boards that provide a walkway across the pits.

These are violations of the California OSHA and industry standards and present a significant safety hazard to staff. PP-27

- I. Many pipes are steel or cast iron and do not meet industry standards for use of PVC in swimming pool applications. Industry standards call for PVC plumbing in pool environments.
- J. The gas supply for the heaters arrive in two 2” gas lines. One system is inside the mechanical room the other is outside the mechanical room and inside the pool deck area. Gas lines should be protected by a fence or building per National Gas Code.
- K. The entry to the pool mechanical room does not have the OSHA and Article 80, Uniform Fire Code safety and warning placards on the door. PP-34
- L. The mechanical room building walls are a patchwork of cracked block wall, plywood, Boards and wire mesh, supported with 4 x 4 stanchions. PP- 34, 35
- M. There is no access to the pool mechanical room from outside the pool enclosure. Service Trucks and chemical delivery vehicles must travel onto the swimming pool deck to delivery chemicals or get close to the room.
- N. At the time of the inspection, no daily records were found. Daily records for chlorine, pH and regular operations is required by CHSC.
- O. The flow meters are not NSF listed per current CHSC, but are adequate for the short term.
- P. Safety equipment such as aprons, face shields and gloves were not evident.
- Q. The room is scattered with unused pipe, valves, containers, wood and debris. CHSC calls for the mechanical rooms to be “uncluttered” and well maintained.

PP-27 Filter Element / Pit / No Protective Railings / Unsecured Walkways



PP-28 Overheated Pool Heater, Peeling Paint



PP-29 Pool Heater Wiring



PP-30 Various Valve Handles and Corroded Extensions, No Labels
Un-kept Mechanical Room Floor



PP-31 Unlabeled Electrical Panels



PP-32 Wood Bracing, Steel & PVC Pipe Sections



PP-33 Non-compliant Pipe Support



PP-34 No Safety or Warning Placards on Doors / Building Walls / Wood Ramp



PP-35 Mechanical Room Building Wall



Summary and Recommendations

Long Term:

Mechanical Building:

In light of the condition of the pool mechanical room building, a new building should be constructed with seismically sound walls, proper access ramp. The building should enclose the gas lines now outside the mechanical room and exposed to patrons inside the pool enclosure.

Estimated Cost: \$220,000

Short Term:

Code violations and safety should be addressed immediately:

Estimated Costs:

-Safety/Warning Placards on the door	\$ 200
-Safety railings on the pits and securing walking ramps	\$4,000
-Seismic supports for plumbing	\$1,000
-Safety equipment	\$ 100
Short Term Estimated Cost:	\$4,300

Mechanical Equipment:

Long Term:

The shared recirculation system for the lap pool and training pool will need to be separated. This will required the re-plumbing of the pools discussed previously.

Staff strongly desires a filter system with less maintenance, such as the industry standard of a high-rate sand filter. This would a reconfiguration of the entire mechanical room including a possible new surge pit, covering the surge/filter pits, new pumps and a backwash holding tank. Three separate system will be required, one for each pool.

The pool heaters are, as staff expressed, pretty much shot. Replacement with newer, more energy efficient units would be very cost effective. Three systems will be required, one for each pool.

Estimated Costs:

New equipment for three separate pools:

-premium efficiency pumps	\$30,000
-high-rate sand filters	\$80,000
-high efficient heaters for three pools:	\$70,000
-automatic water level devices	\$ 1,000
-NSF listed flow meters	\$ 1,000

Long Term Equipment Costs: \$183,000

Short Term:

The code-related issues should be addressed:

-Covers on all wiring (heaters)	\$ nominal
-Bonding of the recirculation pumps	\$ 200
-Record log for chemicals and procedures	\$ nominal
-Clean up, remove debris and organize room	\$ nominal
-Install an eyewash shower adjacent the Chemical feed area	\$ 500

Short Term Equipment Estimate: \$700

Section IV. Chemical Control and Feed Systems

General: The chemical control and feed system falls well short of industry standards and is comprised of nothing less than a single peristaltic chlorine pump that is manually operated by staff. pH is manually controlled by hand dosing of muriatic acid. PP-36

Changes to chemical demand vary in a matter of hours and unless staff are on hand to adjust the chlorine and pH, the chemical residuals will fluctuate considerably. More importantly the effectiveness of the chlorine, the sanitizer and oxidizer in the water to accomplish the

inactivation of pathogens, i.e. bacteria, viruses and protozoan cysts and the destruction of organics, i.e. sweat, saliva, urine etc. is affected by the water pH. Both must be monitored and adjusted at least hourly. Industry standards call for automatic chemical monitoring and control devices which have build-in safeguards (emergency flow switches) and maintain chlorine and pH values minute by minute, 24-7. Many maintain an electronic record of values for 30 to 60 days.

The existing Rolo-Chem chlorinator is shared by both the lap and training pool and does not meet CHSC. In addition, each pool may very well have different chlorine demands and feeding chlorine to both will not allow for any viable residual control. This feeder is not hydraulically interlocked with the recirculation flow and loss of flow could allow the plumbing to be filled with chlorine. This is non-compliant with CHSC.

The manual dosing of acid to the pools and or surge pits, acts very differently with regards to the corrosion of copper pipes than having the acid carefully “metered” with very small doses to recirculating water. The prior ends up lowering the pH dramatically and results in a corrosive total water balance condition that will destroy copper pipes, heat exchangers etc. I believe, manual control of chemicals is the chief cause of the copper plumbing failure of the plumbing and the reason the pool plaster failed 10 years ago (hence the pool being fiber-glassed).

The chemical feed lines are haphazardly installed without double containment or adequate support. PP-36

The chlorine (sodium hypochlorite, 12%) is fed from 52 gallon drums that are not double contained per Article 80, Uniform Fire Code. Other non-compatible chemicals are stored adjacent the chlorine contrary to Uniform Fire Code. PP-37

PP-36 Single Chlorine Feed Pump for Both Pools, unsecured, not double contained feed lines.



PP-37 Chlorine Barrels not double contained



Summary and Recommendations:

Long Term:

- Install an NSF and UL listed automatic monitoring and control device for each of the pools.
- Install an acid or CO-2 feed system (or both to help regulate total alkalinity) to control the pool water pH. Install a double contained bulk storage tank
- Install a UL and NSF listed chlorine feed pump for each swimming pool

Estimated Costs:

- New UL and NSF listed automatic chemical controllers for each pool: \$12,000
- New UL and NSF listed chlorine and acid feeders for each pool with double contained feed lines \$ 2,500
- Provide double containment for all chemical storage \$ 4,000

Long Term Estimated Costs: \$22,000

Short Term

- Install a UL and NSF listed acid feed pump to maintain pH \$ 500
- Install a UL and NSF listed automatic monitoring and control

unit with failsafe flow switch and memory:	\$4,000
-Provide separate containment pallets with a ramp for chlorine and acid storage.	\$ 800
-Install double containment for all chemical feed lines	\$ 200

Short Term Estimated Costs: \$ 6,000

Section V. Entry, Bathhouses and Other Issues

General:

The existing entry is adequate but rather lack-luster and not very appealing to the eyes. There configuration does not lend itself for staff to greet patrons. The entry is not very secure as kids could sneak under the window and into the pool enclosure without being seen. The entry gate has several concrete cracks and patches. PP-38, 39, 40

The entry area is remote and staff would desire a new entry area closer to the community center and parking. Separate office for entry with an indoor counter for handling public entry, swim lesson registration etc with separate offices for the staff, lifeguards and storage is desired.

There are no emergency exits if the gates are closed except for the turnstile, which does not meet current code.. Emergency exists are to be fitted with appropriate crash bars for quick exit.

The open air dressing and bathroom facilities have some advantages, however, they are more difficult to keep clean and a hassle for patrons during unfavorable weather and undesirable during cold weather. The existing “bathhouses”, changing area and bathrooms meet current ADA codes, however, some of the shower handles etc. are broken or missing.

The shade structures have “sail-type” covers, of which at least one is torn and staff reports one was destroyed in a fire. The others are aging and appear in need of replacement. Staff desires measurably more shade throughout the facility.

The deck area is very extensive and many times large than what is really necessary for even large competitive events or public swim activities. There is over 40,000 square feet of deck with the pools separated by large deck areas. This makes supervision of the pools very difficult.

The facility used to have a very successful snack bar that has been replaced with a few vending machines. Snack bars are very popular and generally a significant revenue generator. Additional items such as the sale of goggles, sun screen, swim diapers etc has historically been a winner. Staff indicates the existing office and staff are would make a desirable location of such a entity. Some additional plumbing a considerable remodeling would be necessary.

The location of the mechanical room with regards to the fence does not allow delivery vehicles to access the mechanical are without driving on the pool deck. With a major renovation and re-plumbing, relocation of the mechanical area would be made easier, however, changes to the fencing could also be accomplished.

There is a “trailer container” that houses swim team items and is rather unsightly. Staff desires a separate building for storage for the competitive teams.

It would make sense to eliminate portions of the deck area especially to the north of the lap pool. In addition, add crowd-control fences with locking gates. Especially during winter months when only one pool may be in use, the other pools could be isolated so supervision would be made easier.

PP-38 Entry Gate



PP-39 Gate Deck Area Cracked and Patches



PP-40 Office Window



Summary and Recommendations

New Entry and Offices

It appears to make sense to relocate and construct a new office/entry along with new offices for staff and storage closer to the recreation center and parking. There are some elevations challenges that must be met, however, with an architect's assistance this would provide a far more attractive and function entry.

Estimated Cost: \$360,000

NOTE: More accurate estimates should be obtained from an architect. This figure was based upon a general contractor's estimate, without specific design criteria, of around \$80 per square foot for a 4,000 square foot building with utilities.

Upgraded, Covered Changing Area and Bathrooms

Install roofs and heating for the men's and women's bathhouses.

Estimated Costs: \$30,000

NOTE: Again this estimate was from a general contractor without specific design criteria.

Other Items:

- Install new fencing with gates between pools (assumes all new deck)
- Install emergency exists at several locations with crash bars.
- Install new shades on the existing structures and add and additional 2,000 square feet of shade areas in several areas in the facility
- Renovate the existing entry office and staff room to a snack bar facility
- Construct a new 20 x 40 storage area for competitive/swim meet equipment

Estimate Costs:

-New separation fencing with locking gates between the pool areas (approximately 600 linear feet)	\$ 9,000
-New emergency exists at four locations around facility:	\$ 4,000
-Replace shades on the existing structural poles:	\$ 5,600
-Add four (4) new 500 square foot shade structures:	\$ 8,400
-Renovate the old office into a snack bar*	\$10,000
- Construct a new 20 x 40 storage building for Competitive equipment (steel building)*	\$12,000.

Other items Cost Estimates: \$49,000

SECTION VI COST ESTIMATE SUMMARIES

DECK ISSUES:

Long Term Deck Issues:

Item	Description	Priority	Estimated Cost
Deck Replacement	Includes demolition and Installation	High	\$400,000
Deck Anchorage	Includes stanchion posts, starting platforms, light conduits, bonding etc.	High	\$ 18,000
TOTAL			\$418,000

Short Term Deck & Deck Equipment Issues:

Item	Description	Priority	Estimated Cost
Eliminate Trip Hazards	Concrete patching, grinding etc.	Highest	\$2,000
Install new ramps for ADA	1:12 slope maximum	High	\$8,000
Deck Safety Signs	Re-paint/Install depth marker	Highest	\$500
Hose Bibs	Install anti-siphon devices	Highest	\$300
Underwater Junction box	Install / replace with compliant box (8" above ground)	High	\$200
Lifeguard tower	Install OSHA compliant tower	Highest	\$2,000
Starting Platforms	Install 18" maximum height units	Highest	\$10,000
Dive Pool Handicapped lift	Install new ADA compliant lift when pool is reopened	Moderate	\$5,000
Handrails and anchors	Tighten wedge anchors, replace missing escutcheons	Moderate	\$ 200
TOTAL			\$21,000

POOL VESSEL ISSUES:

Long Term Issues:

Item	Description	Priority	Estimated Cost
Re-plumb all three pools	Replace all suction and return plumbing on all pool	Highest	\$470,000
New gutter system	Replace all gutters on all pools	High	\$180,000
Resurface pools	Re-plaster or fiberglass	High	\$350,000

	all pools		
Install zero depth entry	On training pool. Include simple play structure	Moderate	\$80,000
TOTAL			\$1,080,000

Short Term Issues:

Item	Description	Priority	Estimated Cost
Re-calk all cracks in the gutters	Lap and recreation pool	High	\$2,000
Re-paint lane lines	Lap pool (including targets)	Low	\$3,000
Patch tears in fiberglass lining	Lap and recreation pools	High	\$4,000
TOTAL			\$9,000

Long Term Mechanical Room Issues:

Item	Description	Priority	Estimated Cost
Replace the existing mechanical room	New electrical, Gas water etc.	High	\$220,000
TOTAL			\$220,000

Short Term Mechanical Room Issues:

Item	Description	Priority	Estimated Cost
Install safety/warning placards	On all entry doors	Highest	\$200
Install safety railings on pits and secure walkways	Pump and filter pits	Highest	\$4,000
Install proper seismic supports for plumbing	Use Superstrut or similar hangers and supports	Highest	\$1,000
Provide safety equipment	Aprons, face shields gloves etc.	Highest	\$100
TOTAL			\$6,000

Long Term Mechanical Equipment Issues:

NOTE: Any major renovation will require the separation of all the pools with individual pumps, filters, heating, chemical control and feed Systems.

Item	Description	Priority	Estimated Cost
Install new premium efficiency pumps	For all pools	High	\$30,000
Install new High-rate sand filters	For all pools	High	\$80,000
Install high-efficiency heaters	For all pools	High	\$70,000
Install automatic water level controls	For all pools	High	\$ 1,000
TOTAL			\$183,000

Short Term Mechanical Room Issues:

NOTE: Several of these issues are code related

Item/Description	Priority	Estimated Cost
Install covers on exposed heater wire connections	Highest	Nominal
Bond recirculation pumps with #8 bare copper per code	Highest	\$200
Provide record log for chemical tests and procedures	Highest	Nominal
Clean up mechanical area, dispose of debris	High	Nominal
Install eyewash shower near chemical area	Highest	\$500
TOTAL		\$700

Long Term Chemical Control & Feed issues:

NOTE: Several of these issues are code related

Item/Description	Priority	Estimated Cost
Install new UL & NSF listed automatic chemical controllers	Highest	\$12,000
Install UL and NSF listed chlorine and acid feeders	Highest	\$ 2,500
Provide double containment for all chemical storage	Highest	\$ 4,000
TOTAL		\$18,500

Short Term Chemical Control & Feed issues:

NOTE: Several of these issues are code related

Item/Description	Priority	Estimated Cost
Install a new UL & NSF listed acid feeder	Highest	\$ 500
Install a new UL & NSF listed automatic chemical controller	Highest	\$ 4,000
Separate containment pallets with a ramp for chlorine and acid storage l chemical storage	Highest	\$ 800
Install double containment for feed lines	Highest	\$ 200
TOTAL		\$ 6,000

SECTION VII EXECUTIVE SUMMARY

The Cordova Community Pool complex is and has been an asset to the surrounding community for a half a century, providing swim lessons, camp activities, lap and competitive swimming as well as other family aquatic recreation. However , now of the original four pools, one has been filled in (toddler pool) and of the three remaining pools (the diving pool has been drained)only he lap pool and training pool are still in use. With the toddler pool closed, the “five-year old crowd” really do not have a place to play.

Staff discussions included: “is it worth keeping the pools” or should we start over? The pool vessels appear structurally sound and are very expensive to replace. “Starting over” would add over \$600,000 to the overall renovation budget to install two competition (lap and dive pools) and a new zero depth entry “training/toddler” pool.

Current Conditions:

The pool complex was originally constructed in the early 1960's and was probably, for the most part, state of the industry design and construction. Now over 50 years later, California Health and Safety (CHSC), OSHA, American Disabilities Act (ADA) and Uniformed Fire Code, Article 80 (UFC) standards and codes have changed or have been implemented and the facility falls woefully short in many areas.

The original copper plumbing has failed, resulting in the loss of over 20,000 gallons of water daily, so the diving pool was drained and is no longer in use. The two remaining pools also suffer from the same issue and also have a combined loss of around 20,000 gallons daily. Since the District is now covering the water bill, the cost of the water only (not including the cost of heating, filtering and chemically treating the water) is around \$60 per day (\$2,000 per month) for the two remaining pools. The antiquated gutter configuration also leaks and contributes to the water loss.

The deck area is excessive for this type of facility with over 40,000 square feet of concrete within the perimeter fence (most pool complexes of this sizes have around, 8,000 square feet). The existing deck has several areas that do not comply with current codes with regards to slopes of ramps, barriers, drop offs and handrails. The deck is cracked in many areas and has a many concrete patched sections and poor drainage.

The mechanical room and water treatment systems fall short of current CHSC, OSHA, UFC and industry standards, are labor intensive and present many safety concerns. There are two pools on a single treatment system. The heaters are either not working or beyond their useful efficient life. The water chemistry program is manually controlled with a single chlorine pump with manual dosing of acid for pH control.

The toilet and dressing areas are open air, but do meet current ADA codes, but a difficult to keep clean and are certainly chilly during non summer hours.

Looking Forward:

The existing pools badly need a new gutter system and all new plumbing. The existing training pool can be changed to include a zero-depth entry with water features.

The re-plumbing and other deck issues will require the replacement of the decks with new ADA compliant ramps, rails and deck drains. Staff has discussed moveable fencing to allow for other activities to make use of the concrete deck area which could be moved to accommodate large swim meets.

All the pools must have separate new pump, filter, heater and chemical control and feed systems per CHSC. The mechanical building is in need of replacement.

Discussion of a new entry and office and staff space was also discussed.

Since the delivery of the original report, Cordova staff have already completed a number of the short-term issues in several areas, especially those pertaining to code violations and safety.

Upon completion of the estimated two million dollar renovation, the Cordova Community pool will not only be a premier recreation and competitive facility, look as a new facility, but be set up to operate with new green technology and cost efficient equipment for many decades.

END