

# Councilman-Hunsaker



## Aquatic Master Plan

South Suburban Parks  
and Recreation District  
South Suburban, CO

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**Councilman · Hunsaker**  
AQUATICS FOR LIFE



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# Aquatic Master Plan

## Need for an Aquatic Master Plan

South Suburban Parks and Recreation retained Councilman-Hunsaker for an aquatic master plan for the future of its existing outdoor swimming pools. South Suburban Parks and Recreation is comprised of six townships/cities in the state of Colorado: Town of Columbine Valley, the City of Littleton, the City of Sheridan, the Town of Bow Mar, Centennial (to Hwy 25), and the City of Lone Tree area.

The South Suburban Parks and Recreation District (SSPRD) was formed in 1959 as a regional provider of parks and recreation services for more than 155,000 residents, encompassing over 42 square miles. SSPRD is a community-driven organization that provides both indoor and outdoor recreation amenities. Within this system of indoor and outdoor complexes, the district is currently operating four outdoor aquatic centers: Ben Franklin, Harlow, Holly, and Cook Creek. An audit of Ben Franklin, Harlow, and Holly pools was completed in 2017 and identified numerous improvements needed to keep these facilities operational. Due to the age of these facilities, it was recommended to consider replacement as opposed to repairing the aging infrastructure.

The purpose of this aquatic master plan is to evaluate the potential use for the future of South Suburban Parks and Recreation's pools. Specifically, the outdoor pools are facing functional and/or physical obsolescence. Pools are functionally obsolete when they no longer meet the needs of their intended swimmers and physically obsolete when the physical presence of the aquatic facility is aging, i.e., pumps that are reaching the end of their lifecycles, leaking pool shells, inadequate filtration, current swimming pool code violations, and outdated features. This evaluation considers several conditions: age, size, cost, demographics, community desire, other area aquatic providers, ability of the residents and even non-residents to pay for participation, and ability for the facilities to recover operational costs on a year-to-year basis. This study is written to understand these impacts in order to advise South Suburban Parks and Recreation as to how to proceed with options to stimulate activity, maintain a high profile for community amenities, and recover costs.

## Aquatic Trends

As swimming facilities redesign themselves to attract the entire community of swimmers, features and trends emerge. These trends continue to evolve in the aquatic industry as community expectations regarding recreational aquatic experiences evolve, thus creating a greater demand for facilities capable of meeting the needs of the majority of residents that the facility is intended to serve. Addressing the needs of age groups—children, teens, adults, and seniors—who make up user groups, will dictate the scope of lessons, recreation, competition, fitness, and therapy that aquatic centers provide.

Leisure pools invite recreation with wide, irregularly shaped expanses of shallow water, washing up to zero-entry beaches where users can sunbathe while their young children/grandchildren play in water levels in which they are most comfortable. There are participatory waterplay elements that turn water into a dynamic interactive playmate. Fountains, bubblers, geysers, raindrops, wet playgrounds, lily pad

walks, water cannons, and slides are just a few of the many relatively inexpensive options employed to develop the kind of recreational aquatic facility that is right for the community and its budget.

Competitive and fitness swimmers are accommodated as well. While they may represent a smaller portion of the total user population, they are a loyal, supportive group—often the backbone of the aquatic community. They show up every day, rain or shine, and require a dedicated area for lap swimming and/or training and competition. The same is true with lesson users, a user group that represents the future of the facility. If children do not learn to be comfortable in an aquatic situation, they will not attend the facility for competition *or* recreation when they are older.

Non-aquatic areas are equally important considerations in contemporary family aquatic centers. Spreading features out and creating more recreational options encourage people to stay longer, resulting in more concession expenditures and increased potential for admission revenues. Designs stretch the boundaries of the old swimming pools, pushing out the fences with wider deck spaces for more lounging opportunities and social interaction.

### Identifying the Best Approach

Analyses of other area aquatic providers indicate numerous homeowner association pools, a YMCA, other nearby parks and recreation facilities, and four area high schools in the City of Littleton that provide indoor pools. Country clubs were not analyzed as they typically are not competitors for parks and recreation pools. The homeowner association pools were, for the most part, similar in size and scope and strictly for residents within the associations. To the south, Highlands Ranch Community Association provides four elaborate recreation centers with aquatics for their residents. Englewood Parks and Recreation's Pirate's Cove outdoor pool appears to be the biggest competitor to the South Suburban Parks and Recreation outdoor pools, as this waterpark provides all the modern amenities that communities are seeking in recreational and fitness aquatics.

Cook Creek demonstrates the "future" of aquatics for South Suburban Parks and Recreation while Franklin, Harlow, and Holly were designed for a neighborhood with the influencing design characteristic centered on competitive swimming requirements. There are two fundamental strategic decisions for the future of aquatic programming for the district; the first decision is to either support the neighborhood park approach, where there are several smaller facilities that serve individual neighborhoods, or develop a community aquatic center strategy, where a larger facility serves multiple neighborhoods, and the second decision is to determine what type of aquatic experience to provide (leisure, competitive, lesson, wellness).

The key to a successful approach for any community is to make sure it meets the desires of the community. Each approach has its own pros and cons. The traditional neighborhood approach allows users easier access and increases the likelihood of people walking or biking to the pool. This is typically considered a higher level of service. The downside is that the neighborhood approach requires additional staffing, which may increase the cost to operate the overall aquatic system. The community approach helps improve sustainability of the overall aquatic system, but can limit the perceived level of service within the community. Changing from a neighborhood delivery approach can be difficult. Keeping the neighborhood approach causes the least amount of change and associated strains in the community, but it also offers

little opportunity for financial sustainability. The question of “which approach is best for South Suburban” was brought to the community for input. The results identified a strong desire to keep the neighborhood approach and incorporate more amenities for the local families and increase capacity to grow the lesson and team programs.

## Operations

Interactive recreation-driven aquatic centers have become the norm since the 1980s and 1990s. Many of these municipal pools are bundled with indoor aquatic centers for year-round fitness and amusement. Facility designs are innovative, morphing into water wonderlands, taking their cues from indoor European public pools and outdoor Caribbean resort pools. Large free-form bodies of water sweep across the American landscape, and most without a spectacular view, creating art forms in themselves.

Many municipalities are reluctant to look toward constructing a new pool facility as the old one costs “so much to operate.” With a high tax base, many residents feel that \$3 for a day at the old pool is fair. But these older pools are no longer bringing in the swimmers. They often sit empty while families drive an hour or more to the regional new water park to find recreation value; and they don’t mind paying for it when they find it. Old pools do cost a lot to operate with their outdated pumps, cracked pool shells, and lack of amenities. Repair is often a band-aid fix, resulting in the return of a handful of swimmers with their buck-fifty.

Many park and recreation departments create community pride by merging the best features of public pools and commercial water parks to offset escalating taxes coupled with a reduction in tax bases. They succeed in creating an adventurous ambience while segregating creative water play areas for various age groups. The safe and friendly municipal pools with plentiful shade areas invite residents to partake in zero-depth entry pools, waterslides, and lazy rivers with island-style comfort and hospitality. Residents eagerly return year after year to slide down the thrilling new waterslide, climb the mammoth new water play structure, or try the challenge of “inland surfing” right in their community. These facilities are designed to accommodate today’s family desire of “staying together and playing together” ideal.

With a new aquatic center, communities tend to see an improvement in the sustainability of their pools. This is due to a variety of factors that improve the day to day operations. With new mechanical systems and the use of modern technologies, the new pools will operate more efficiently and will require less maintenance hours. Additionally, with a new facility that offers new amenities, facilities tend to see a dramatic increase in usage for day passes and programs. This, along with residents’ willingness to pay higher fees, results in a significant increase in operating revenue. By incorporating some of these opportunities into the future aquatic system, South Suburban can improve the sustainability of their pool system.

## Methodology

The following methods were used to understand the community and determine options for the improvement of existing aquatic centers.

1. Researched the needs of South Suburban Parks and Recreation through extensive discussions with staff as well as site visits.

2. Developed an opinion of potential user groups by assessing specific user group profiles and analyzing the target market area using demographic studies from census data.
3. Observed and recorded similar aquatic centers within South Suburban Parks and Recreation to understand the programs, operations and fees of those facilities.
4. Developed recommendations for upgrading some of the existing outdoor aquatic facilities and designed seasonal aquatic center concepts for existing recreation center support and stand-alone community aquatic programs.
5. Developed construction and project costs based on local industry information.

## Recommendation

Several development concepts, on which the aquatics system could be based, were devised for study. The intent of studying these concepts was to look at different ways of approaching the challenge of creating a district-wide system. In determining an Aquatic Master Plan, the district looked at the needs of the local aquatics groups, neighborhoods and other service providers. Moreover, factors such as accessibility, affordability and sustainability were taken into consideration. The consultant team prepared three different phases to address the future of aquatics in South Suburban. Phase one addresses the immediate needs of aging outdoor pools. Phase two includes highly requested items from the needs assessment that are not currently funded. Phase three includes options for future enhancements to the aquatic system if money were to become available.

Within Phase one, three different budget scenarios were created to maximize the investment of the SSPRD: minimum, preferred, and expanded. All three options will completely demolish the current facilities and replace them with new construction of aquatic amenities, bath houses, mechanical rooms, exterior lighting, and other necessities. The Minimum Option provides the base amenities and locations desired by the SSPRD residents, but is limited on improved recreation amenities and increased capacity. The Preferred Option is able to keep the current locations and programs, but also adds recreational benefits with waterslides and increased shallow areas. The Expanded Option includes the base amenities from the preferred option, but also expands the lap pool to 8 lanes at Holly for additional capacity.

### Phase 1 - Minimum

- Harlow: New 3-lane pool with waterslide and crossing activity, and a separate sprayground to replace Harlow. Also includes new bathhouse, decking, overhead lights, fencing, and parking lot improvements.
- Franklin: New 6-lane lap pool with a diving board and rope swing, and kiddie pool to replace Franklin. Existing sprayground would remain. Also includes new bathhouse, decking, overhead lights, fencing, and parking lot improvements.
- Holly: New 6-lane lap pool with a diving board and rope swing, and a small leisure pool to replace the current Holly pool. Also includes new bathhouse, decking, overhead lights, fencing, and parking lot improvements.



*Phase 1 - Preferred*

- Harlow: New 3-lane pool with waterslide and crossing activity, and a separate sprayground to replace Harlow. Also includes new bathhouse, decking, overhead lights, fencing, and parking lot improvements.



- Franklin: New "L-shaped" 6-lane lap pool with expanded shallow end with a diving board and rope swing, a run-out waterslide, and kiddie pool to replace Franklin. Existing sprayground would remain. Also includes new bathhouse, decking, overhead lights, fencing, and parking lot improvements.

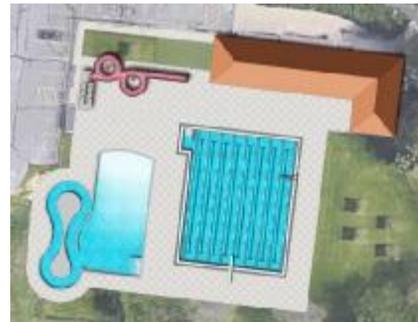


- Holly: New 6-lane lap pool with a diving board and rope swing, a run-out waterslide, and a small leisure pool to replace the current Holly pool. Also includes new bathhouse, decking, overhead lights, fencing, and parking lot improvements.



## Phase 1 – Expanded

- Harlow: New 3-lane pool with waterslide and crossing activity, and a separate sprayground to replace Harlow. Also includes new bathhouse, decking, overhead lights, fencing, and parking lot improvements.
- Franklin: New “L-shaped” 6-lane lap pool with expanded shallow end with a diving board and rope swing, a run-out waterslide, and kiddie pool to replace Franklin. Existing sprayground would remain. Also includes new bathhouse, decking, overhead lights, fencing, and parking lot improvements.
- Holly: New 8-lane lap pool with a diving board and rope swing, a run-out waterslide, and a small leisure pool to replace the current Holly pool. Also includes new bathhouse, decking, overhead lights, fencing, and parking lot improvements.



*Phase 2: Unfunded / Future Considerations*

- Cook Creek: A renovation and expansion to add shade structures, night lighting, and a new 4-lane teaching and programming pool will help maximize the pools usage.



- Aquatic Complex: New indoor pool at a district owned property within the central region to include a 25-yard by 25-meter main pool, separate therapy pool and a separate warm-water activity pool with waterslides and play amenities.

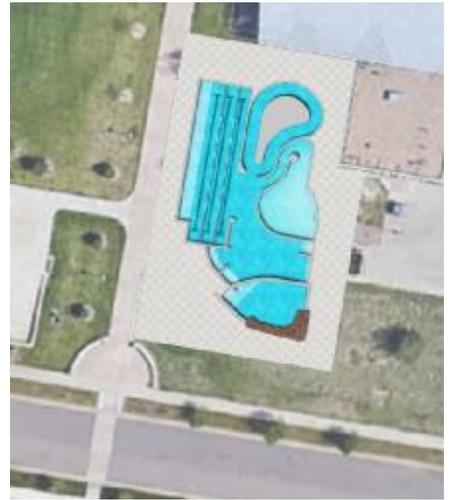


- Ridge Gate East: New 25-yard by 25-meter competition pool for high school use, plus a separate warm-up / teaching pool.



### *Phase 3: Unfunded System Enhancements*

- Lone Tree Rec Center: Add a new multiuse outdoor recreation pool to the Lone Tree Rec Center site. Concept includes additional teaching lanes, deep water teen space, and shallow water kiddie area.



- Buck Recreation Center: Renovate the current multiuse area within the Buck Rec Center to separate the lap lanes from the leisure water. No change to the current therapy pool.

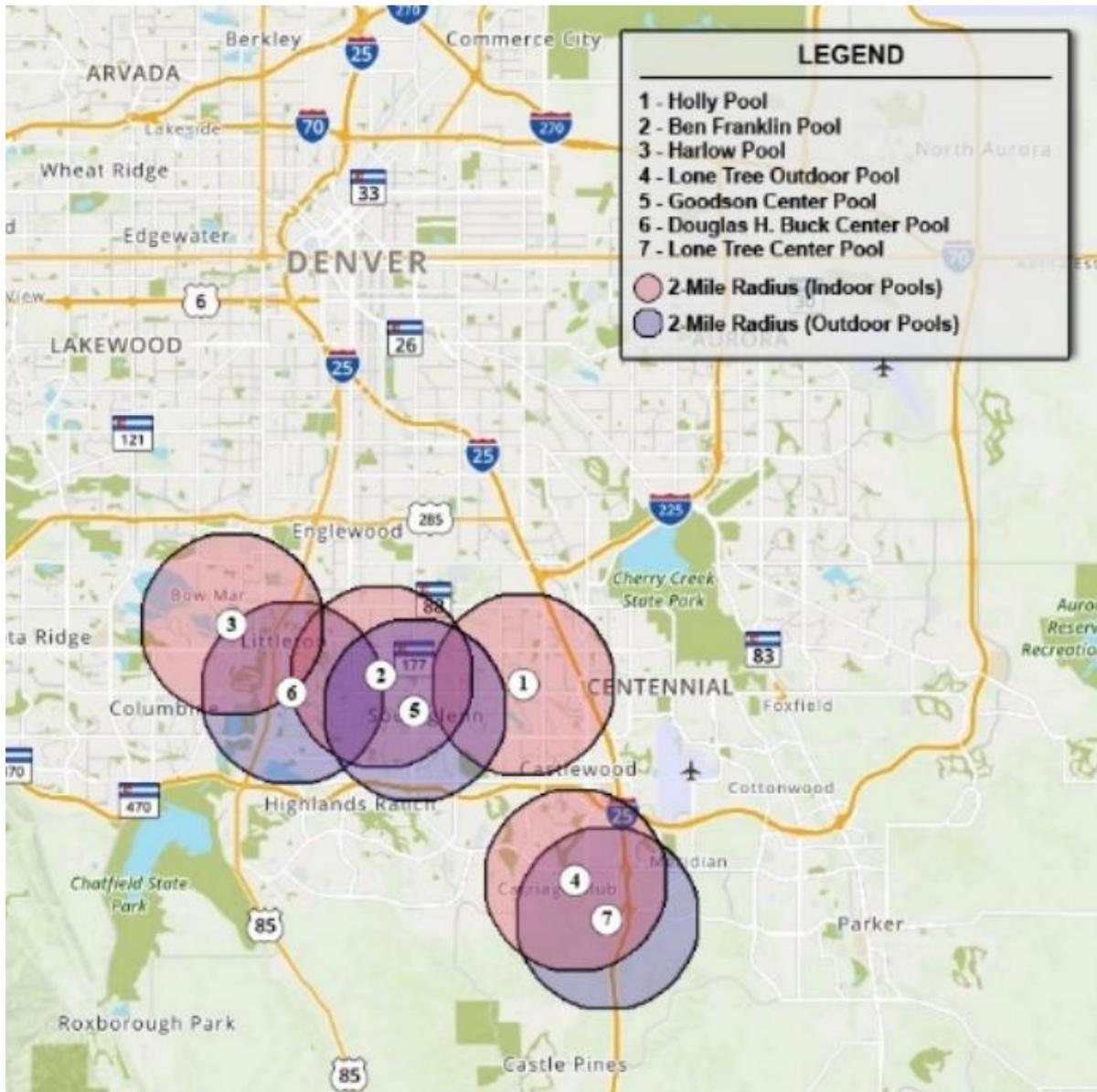


# Needs Assessment

## Existing SSPRD Pools

Internal analysis includes an assessment of the existing South Suburban Parks and Recreation swimming pool portfolio. This evaluation strives to determine features that might differentiate the park and recreation pools from competing offerings in the area. Such differentiation and analysis may be based upon feasibility of facilities and amenities, recreation enhancement, and special relationships.

### *South Suburban Outdoor and Indoor Pools | 2 Mile Radius*



## *Holly Pool*

*Location: 6651 S. Krameria Way*

Constructed in 1977

### *Amenities*

- 6 25-meter lane, L-shaped pool
- Tot pool
- Plunge slide
- Diving board
- Concessions

### *Strengths*

- Largest swim lesson program
- Natural grass and shade areas
- Strong neighborhood support
- Central location
- Well attended
- Recently updated family restrooms and concessions

### *Weaknesses*

- Proximity to houses creates noise concerns
- Overall pool capacity; programs compete for space
- Limited amenities
- Significant mechanical issues
- Parking

### *Opportunities*

- Some space to grow with site reorganization
- Ability to become centrally located community or regional aquatic complex
- Potential for regional park with adjacent tennis courts

### *Threats*

- Neighborhood concerns about increased attendance and traffic.



## *Ben Franklin Pool*

*Location:* 1600 E. Panama (E. Panama and Franklin)

Constructed in 1964

### *Amenities*

- 6 25-meter lane, L-shaped pool
- Diving board
- Plunge slide
- Water slide
- Tot pool
- ADA accessible sprayground
- Concessions

### *Strengths*

- Strong neighborhood support
- 3 schools within walking distance
- Sprayground is popular
- Central district location
- Well attended

### *Weaknesses*

- Age of mechanical, bathhouse, pool, and other items
- Parking
- Somewhat hidden location
- No shallow/zero-depth access in main pool
- Programs compete for space

### *Opportunities*

- Potential to expand if school donated land

### *Threats*

- One of the oldest pools in the district
- Limited land for expansion



## *Harlow Pool*

*Location:* 5151 S. Lowell (W. Belleview and Lowell)

Constructed in 1963

### *Amenities*

- 6 25-meter lane, L-shaped pool
- Tot pool
- Plunge slide
- Water slide
- Diving board

### *Strengths*

- Waterslide
- Visible from road
- Park setting
- Serves diverse population

### *Weaknesses*

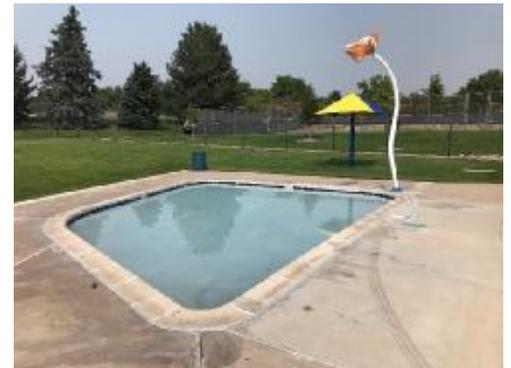
- Age of bathhouse, mechanical, pool, and other items
- Lowest attendance
- Very low program participation
- Near the outer boundaries of the district, with significant non-district usership
- Some language barriers with attendees
- Lower income area with limited discretionary income

### *Opportunities*

- Largest site with plenty of room to expand
- Niche market for lower income families with young children
- Potential to become regional park with other park amenities

### *Threats*

- Pirate's Cove nearby
- Oldest pool in the system



## *Cook Creek Outdoor Pool*

*Location: 8711 Lone Tree Parkway*

Constructed in 2009

### *Amenities*

- Leisure
- Water basketball
- Waterslide
- Play area with interactive water features
- 8 lane 25 yard lap pool
- Diving board (1 meter)
- Concession stand
- Shade structures (6)

### *Strengths*

- Newest outdoor pool in the district
- Highest attended pool
- Multiple pools allows for more usage

### *Weaknesses*

- Can be over-crowded due to popularity
- Limited room for expansion
- Parking

### *Opportunities*

- Increase hours of operation for programs
- Add outdoor lighting for night swim
- Add third pool for lessons and fitness programs

### *Threats*

- Increased growth within Lone Tree area could add to over-crowding



## *Goodson Center Pool*

### *Location*

6315 S. University Blvd.

Centennial

### *Amenities*

- 6 25-meter, L-shaped pool
- Tot pool
- Hot tubs

### *Strengths*

- Bundled with rec center
- Lesson program
- Center of district
- Shallow area of pool
- Masters' team
- Water fitness program
- Lap swimmers

### *Weaknesses*

- Lack of play amenities
- No deep water
- One body of water, which makes it difficult to set temps to meet all needs
- Dated facility
- Built out site
- Mechanicals

### *Opportunities*

- Adjacent recreation feature
- Currently studying renovation options

### *Threats*

- New pool in area could make location obsolete
- Pool area may be better used for other recreation purposes



## *Douglas H. Buck Center Pool*

### *Location*

2004 W. Powers Ave.

Downtown Littleton (adjacent to rail system)

### *Amenities (Indoor aquatic center)*

- Zero-depth entry leisure pool
- 3 25-yard lap lanes
- Therapy pool
- Current channel
- Outdoor hot tub

### *Strengths*

- 2 pools
- Strong senior participation and support
- Multi-generational
- Bundled amenities
- Location
- Only therapy pool available in district

### *Weaknesses*

- Land locked
- Leisure and lap pool connected, makes it difficult to set temperature to meet various needs
- Noise – recreational swimmers and programs
- Leisure components tied into lap lanes
- Limited deck space
- Not able to program swim team due to minimal lap lanes

### *Opportunities*

- This facility is the most multi-generational and can offer unique programs and services
- Potential to work with PT and expand aquatic therapy offerings
- Ability to renovate current space to increase program offerings

### *Threats*

- Therapy pool is popular and over crowded
- Frustrated lap swimmers finding new centers
- Over-crowding could turn users away



## *Lone Tree Center Pool*

### *Location*

10249 Ridgeway Circle

Lone Tree Area

### *Amenities (Indoor aquatic center)*

- Zero-depth entry leisure pool
- Play features
- 3 25-yard lap lanes
- Waterslide
- Hot tub

### *Strengths*

- Modern pool
- Growing area
- Young families
- Swim lesson program

### *Weaknesses*

- Not able to program swim team due to limited lap lanes
- Deck space
- Reach capacity sometimes
- One body of water that makes it difficult to set temps to meet all needs

### *Opportunities*

- Potential to add outdoor pool
- Rapid development in area could support future expansion
- No school pools, could partner with schools for expansion

### *Threats*

- Facility is already at capacity
- Ridge Gate East facility could compete for certain uses



## Area Demographics

Factors that can influence attendance include projections for growth/decline of population, income levels, and age groups. Market studies are used to predict how relevant products, services, and fees are to residents. Given the character of the area, the existing outdoor pools, and other aquatic experiences in and near the community, the Consultant is of the opinion that the majority of the proposed project's recreation service market area will exist among people who live within the six townships/cities in the parks and recreation boundaries.

A study of demographic patterns in the area is helpful in projecting usage rates. The resident market area has been segmented into the following zones:

- North – Area surrounding Buck Recreation Center
- Central – Area surrounding Goodson Recreation Center
- South – Area surrounding Lone Tree Recreation Center

### *Population*

- The central region is currently the most densely population area, with the north region projected to surpass it by 2020
- The south region is the fastest growing area within the district

### *Age Distribution*

- The central region has the largest population of children in market area (23,730 residents under age 20)
- The south region has the largest percentage of children under 20 (28.8%)
- The central region has the highest median age (44.3)

### *Income*

- The south region has the highest per capita and median household income at \$57,459 and \$115,730 respectively
- The north region has the lowest highest per capita and median household income at \$39,070 and \$62,694 respectively

## Community Input

Community input included several different approaches to gathering input and working with the community. Meetings were held with the public and stakeholders to gather input. In order to maximize meeting attendance, three separate meetings were held in three locations around the district for each of the community sessions. Public meetings were held at Buck Recreation Center, Goodson Recreation Center, and Lone Tree Recreation Center. Stakeholder meetings were held to solicit specific input about user group needs. Stakeholder meetings included representatives from swim teams, parents of preschoolers/toddlers, aqua fitness participants, Masters/lap swimmers, camp and rental groups, SSPR aquatic staff, and schools. Additionally, a survey and Facebook poll were used to allow users an easy way to provide feedback

## Survey

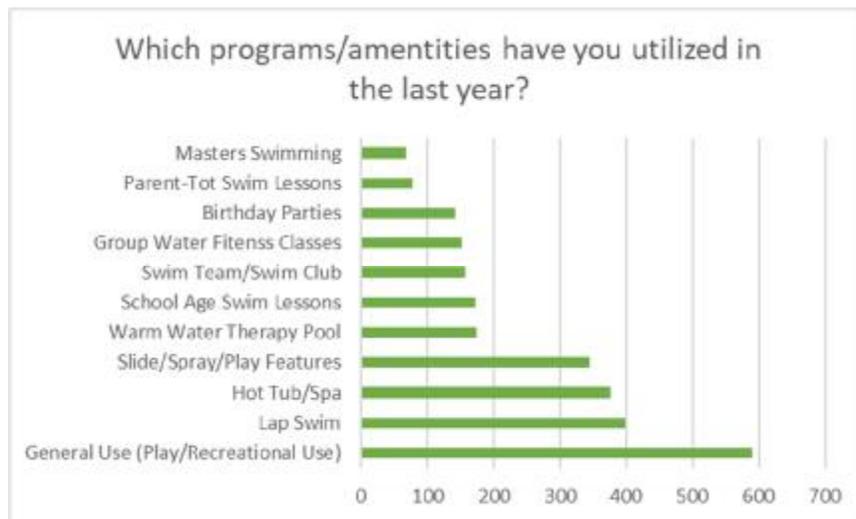
A survey was created to allow residents to provide feedback on the current and future South Suburban Parks and Recreation District aquatic system. The survey received over 900 total responses. The following highlights some of the feedback received from the online survey.

Of the 900 responses:

- 45% visited an indoor aquatics facility at least once a week
- 48% visited an outdoor aquatics facility at least once a week during the operational season
- Highest rated improvements:
  1. A facility that is open year round
  2. A facility that has locker rooms with modern amenities
  3. A pool that has easy access, with warm water
  4. A facility that offers community aquatic programs for all ages
  5. A facility that has recreation aspects like waterslides, lazy river, spray features, and diving boards.
- Responses who felt the current condition of the SSPRD pools was excellent or good
  - Cook Creek: 93%
  - Lone Tree: 84%
  - Buck: 83%
  - Holly: 70%
  - Goodson: 58%
  - Ben Franklin: 48%
  - Harlow: 34%

## Charts and Graphs

The following charts and graphs that summarize some of the survey results were presented at the public meetings.



## Public Meetings

During the public meetings, and available on the Facebook poll, the residents of South Suburban were asked to rank three scenarios for replacement of the aging outdoor pools. These scenarios included a one-pool, two-pool, and three-pool option. The one-pool option proposed replacing Holly pool with a large regional aquatic facility and replacing both Franklin and Holly with spraygrounds. The two-pool option looked at replacing both Franklin and Holly with new pools but replacing Harlow with a sprayground due to the limited use. The three-pool option proposed keeping all locations open, but included limited amenities at each.

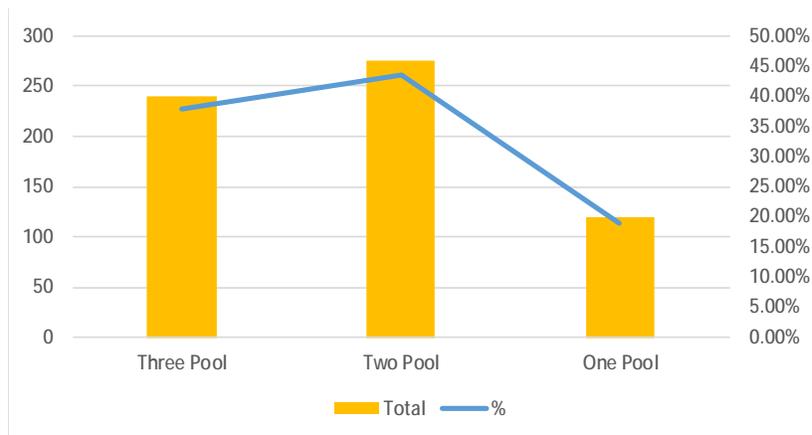
The community was asked to vote on Scenario 1 (three pool option), Scenario 2 (two pool option), and Scenario 3 (one pool option). The following boards were used to allow attendees to vote. Each person at the meeting was asked to rank each option from 1 to 3, using color coded dots.



### Onsite Voting Results

The following chart shows the results of the three public meetings held at the rec centers.

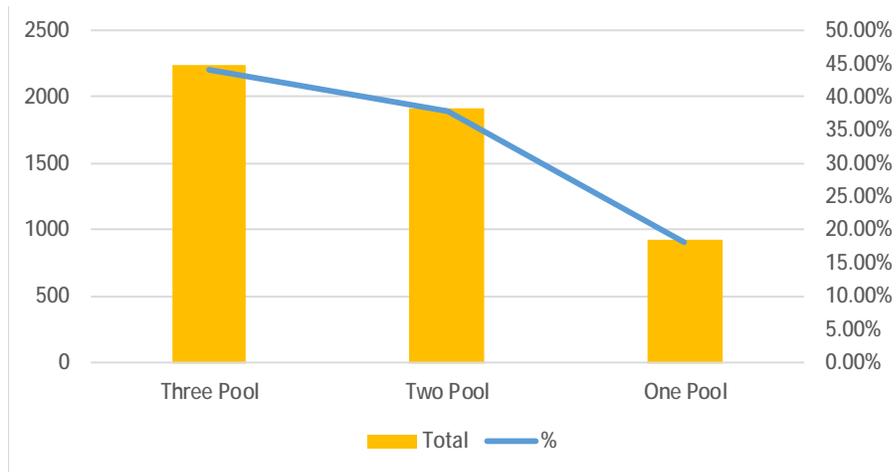
	1st Choice	2nd Choice	3rd Choice	Total	%
Three Pool	28	28	15	239	37.76%
Two Pool	33	36	2	275	43.44%
One Pool	8	8	55	119	18.80%



### Online Voting Results

The following chart shows the results of the Facebook poll that was hosted on the SSPRD site.

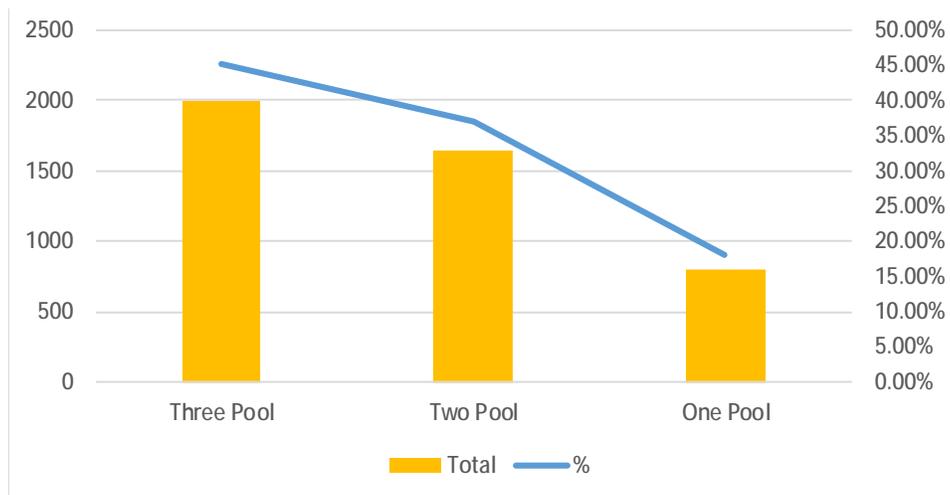
	1st Choice	2nd Choice	3rd Choice	Total	%
Three Pool	302	151	41	2004	45.07%
Two Pool	122	330	42	1642	36.93%
One Pool	70	13	411	800	17.99%



### Cumulative Total Voting Results

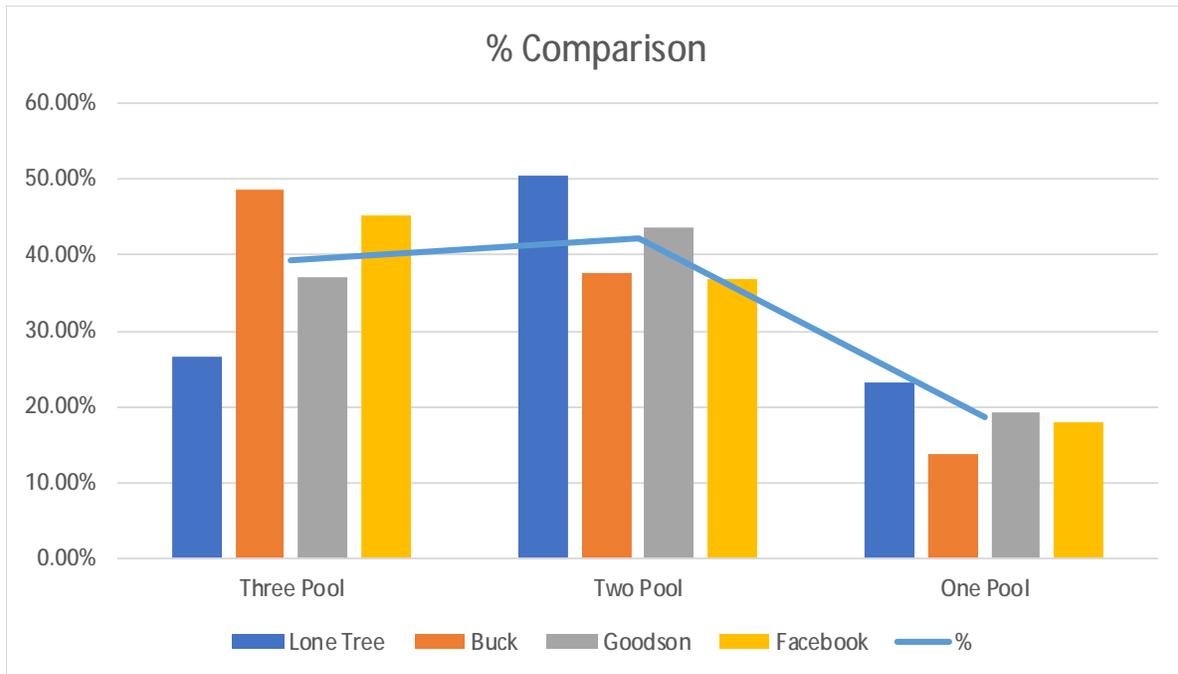
The following chart shows the results of both the on-site and online voting.

	1st Choice	2nd Choice	3rd Choice	Total	%
Three Pool	330	179	56	2243	44.16%
Two Pool	155	366	44	1917	37.74%
One Pool	78	21	466	919	18.09%



The following chart breaks out the three locations for onsite meetings along with the online voting poll.

	Lone Tree	Buck	Goodson	Facebook	%
Three Pool	26.50%	48.61%	37.10%	45.07%	39.32%
Two Pool	50.43%	37.50%	43.55%	36.93%	42.10%
One Pool	23.08%	13.89%	19.35%	17.99%	18.58%



The results from the polls indicate the following:

- The Three Pool and Two Pool options were very close in the voting totals, with the One Pool option being the least popular.
- Residents across SSPRD did not prefer the one-pool scenario. They felt this limited the aquatic opportunities within the district and would create an un-manageable situation in the Holly neighborhood.
- The Harlow area residents were not concerned with the size of the pool, but felt a small pool was needed in the area.
- Franklin and Holly area users preferred larger pools to help with the current capacity limitations.
- A hybrid of the proposed Three Pool and Two Pool option that keeps three locations but decreases the size of Harlow would best meet the residents' desires.
  - Small neighborhood pool at Harlow
  - Replace Franklin with a similar size pool
  - Community pool at Holly with increased capacity

## Recommendations and Implementation Strategy

Municipalities are shifting emphasis from facilities designed specifically for competitive swimming to considering the entire community's needs. The old theory of building a rectangular pool and expecting everyone to use the same pool is unrealistic for tiny tots, families, the disabled, and seniors. Often, multiple bodies of water are necessary to accommodate greater representation from the community, thus resulting in family aquatic centers with enhanced recreation facilities, wellness programming, and traditional swimming.

By researching and surveying current swimming pool trends, the Consultant developed several options for consideration in the South Suburban Parks and Recreation Aquatic Master Plan. By studying utilization of the existing aquatic facilities, some features will outweigh others in participation levels according to area demographics. The participation levels of children, adults, families and senior citizens is important to the community as it plans to meet the aquatic needs of its residents now and in the future. For example, the leisure pool is an important feature for all age groups; the ease in which adults and children interact in the leisure pool with zero-beach entry sustains its recreation value for all ages. Pools with deeper water require children to be supervised by parents. Older adults and citizens with disabilities may have difficulty with accessibility to a pool without zero-beach entry. Teen markets and experienced swimmers will opt for deep water and diving challenges.

The concepts developed in this Aquatic Master Plan represents a system of solutions derived from community input, or the "wants" of the community, balanced with the realities of public budgets and priority to prioritize the "needs" of South Suburban residents as it relates to aquatic facilities. Alternatives were evaluated on the basis of the effectiveness of response to the community's wants and needs, as well as likely capital costs. With this information, three phases were created to outline the future aquatic system. Phase 1 includes the immediate priority items of addressing the outdoor pools. Phase 2 and 3 look at future considerations to improve and enhance the overall aquatic system. Within Phase 1, three levels of investment were developed for consideration. The Minimum Option provides the base amenities and locations desired by the SSPRD residents, but is limited on improved recreation amenities and increased capacity. The Preferred Option is able to keep the current locations and programs, but also adds recreational benefits with waterslides and increased shallow areas. The Expanded Option includes the base amenities from the preferred option, but also expands the lap pool to 8 lanes at Holly for additional capacity.

The following options are offered as pictorial representations of space required to meet the aquatic programming demands of the area and provide a visual understanding of each recommended option with the amenities illustrated in conceptual form. These graphical representations are not the actual facility design or what the facility, if re-built, will look like. Instead, the options serve as a description of space allocated for the various amenities to be included.

### Phase 1: Minimum

The minimum scenario includes replacement of Franklin, Harlow, and Holly pools. However, due to the limited funds, recreational amenities were minimized, and the current lane count was not expanded to

increase training and lesson capacity. This option keeps pools in all three locations, but Harlow and Franklin will receive smaller pools than they currently have.

### Harlow

The Harlow pool replacement includes a shallow water 3-lane lap pool, with a small family waterslide. The pool also includes a crossing activity and a sprayground for the children. The sprayground could be operating beyond the pool season to add an additional amenity to the Harlow park site.



<b>OPINION OF PROBABLE COST: Harlow 1</b>			
Description	Unit	Amount	Opinion of Cost
Demolition	Allowance	1	\$150,000
Bathhouse		1,800	\$513,000
Aquatic Facility		2,600	\$908,500
Sprayground	Sq. Ft.	500	
Play features	Allowance	1	
3 Lane Lap Pool	Sq. Ft.	2,100	
Waterslide w/ Tower	Allowance	1	
Crossing Activity	Quantity	1	
Support		7,800	\$136,995
Outdoor Deck	Sq. Ft.	5,200	
Fence	Linear Ft.	353	
Overhead Lighting	Sq. Ft.	7,800	
Shade Structures	Quantity	3	
Unit		Sq. Ft.	Opinion of Cost
Site Construction Costs (landscaping, drainage, walks)			\$156,000
<b>Total Construction Costs</b>	<b>Sq. Ft.</b>	<b>7,800</b>	<b>1,864,495</b>
Furniture, Fixtures, Equipment			\$42,900
Subtotal			\$1,907,395
Preliminary Design Contingency	5.0%		\$95,370
Inflation (1 Year)	5.0%		\$95,370
Indirect Costs	10.0%		\$200,277
Total Estimated Project Costs:			\$2,298,411
<b>Say</b>			<b>\$2,300,000</b>

## Franklin

The Franklin pool replacement includes a standard 6-lane lap pool with a 1-meter diving board and a rope swing for the children to play with. The concept also includes a new tot pool with a ramped entry and spray features. The current sprayground will remain.



OPINION OF PROBABLE COST: Franklin 1			
Description	Unit	Amount	Opinion of Cost
Demolition	Allowance	1	\$150,000
Bathhouse		1,864	\$531,321
<b>Aquatic Facility</b>		<b>3,915</b>	<b>\$1,150,750</b>
Tot Pool	Sq. Ft.	715	
Play features	Allowance	1	
6 Lane Lap Pool	Sq. Ft.	3,200	
Rope Swing	Quantity	1	
Diving Board	Quantity	1	
<b>Support</b>		<b>11,745</b>	<b>\$189,037</b>
Outdoor Deck	Sq. Ft.	7,830	
Fence	Linear Ft.	433	
Overhead Lighting	Sq. Ft.	11,745	
Shade Structures	Quantity	3	
<b>Unit</b>		<b>Sq. Ft.</b>	<b>Opinion of Cost</b>
Site Construction Costs (landscaping, drainage, walks)			\$176,175
<b>Total Construction Costs</b>	<b>Sq. Ft.</b>	<b>11,745</b>	<b>2,197,284</b>
Furniture, Fixtures, Equipment			\$64,598
Subtotal			\$2,261,881
Preliminary Design Contingency	5.0%		\$113,094
Inflation (1 Year)	5.0%		\$113,094
Indirect Costs	10.0%		\$237,498
Total Estimated Project Costs:			\$2,725,567
<b>Say</b>			<b>\$2,730,000</b>

## Holly

The Holly pool replacement includes a standard 6-lane lap pool with a 1-meter diving board and a rope swing for the children to play with. A separate leisure pool includes a zero depth entry and a small lazy river that can be used for fitness programs as well as open recreation swim.



OPINION OF PROBABLE COST: Holly 1			
Description	Unit	Amount	Opinion of Cost
Demolition	Allowance	1	\$150,000
Bathhouse		3,048	\$868,571
Aquatic Facility		6,400	\$1,900,000
Leisure Pool	Sq. Ft.	3,200	
River	Add Cost	1	
6 Lane Lap Pool	Sq. Ft.	3,200	
Rope Swing	Quantity	1	
Diving Board	Quantity	1	
Support		19,200	\$285,069
Outdoor Deck	Sq. Ft.	12,800	
Fence	Linear Ft.	554	
Overhead Lighting	Sq. Ft.	19,200	
Shade Structures	Quantity	3	
Unit	Sq. Ft.		Opinion of Cost
Site Construction Costs (landscaping, drainage, walks)			\$288,000
<b>Total Construction Costs</b>	<b>Sq. Ft.</b>	<b>19,200</b>	<b>3,491,641</b>
Furniture, Fixtures, Equipment			\$105,600
Subtotal			\$3,597,241
Preliminary Design Contingency	5.0%		\$179,862
Inflation (1 Year)	5.0%		\$179,862
Indirect Costs	10.0%		\$377,710
Total Estimated Project Costs:			\$4,334,675
<b>Say</b>			<b>\$4,340,000</b>

## Minimum Option Summary

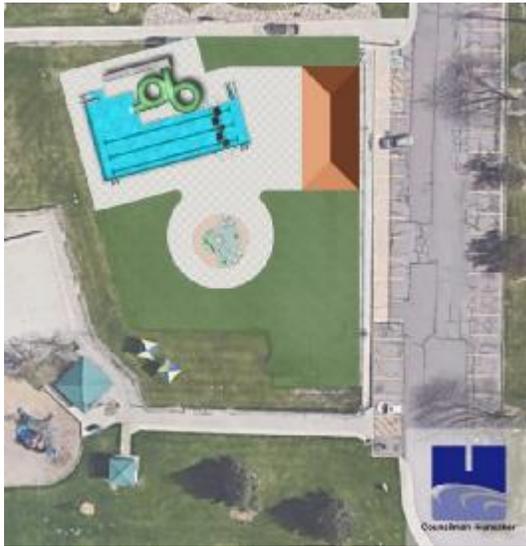
Option	Harlow	Franklin	Holly	Cost
Minimum	3 Lane Lap, waterslide, sprayground	6 lane lap, tot pool	6 lane lap, small leisure pool	\$9,370,000

## Phase 1: Preferred

The preferred scenario includes replacement of Franklin, Harlow, and Holly pools, but adds additional recreation amenities compared to the \$9 million scenario. The current lane count was still not expanded to increase training and lesson capacity, but Franklin pool is expanded to match the current size.

### Harlow

The Harlow pool replacement includes a shallow water 3-lane lap pool, with a small family waterslide. The pool also includes a crossing activity and a sprayground for the children. The sprayground could be operating beyond the pool season to add an additional amenity to the Harlow park site.



OPINION OF PROBABLE COST: Harlow 2			
Description	Unit	Amount	Opinion of Cost
Demolition	Allowance	1	\$150,000
Bathhouse		1,800	\$513,000
Aquatic Facility		2,600	\$908,500
Spryground	Sq. Ft.	500	
Play features	Allowance	1	
3 Lane Lap Pool	Sq. Ft.	2,100	
Waterslide w/ Tower	Allowance	1	
Crossing Activity	Quantity	1	
Support		7,800	\$136,995
Outdoor Deck	Sq. Ft.	5,200	
Fence	Linear Ft.	353	
Overhead Lighting	Sq. Ft.	7,800	
Shade Structures	Quantity	3	
Unit		Sq. Ft.	Opinion of Cost
Site Construction Costs (landscaping, drainage, walks)			\$156,000
<b>Total Construction Costs</b>	<b>Sq. Ft.</b>	<b>7,800</b>	<b>1,864,495</b>
Furniture, Fixtures, Equipment			\$42,900
Subtotal			\$1,907,395
Preliminary Design Contingency	5.0%		\$95,370
Inflation (1 Year)	5.0%		\$95,370
Indirect Costs	10.0%		\$200,277
Total Estimated Project Costs:			\$2,298,411
<b>Say</b>			<b>\$2,300,000</b>

## Franklin

The Franklin pool replacement includes a "L-shaped" 6-lane lap pool with a diving board and rope swing. The L shape allows for more intermediate shallow water that can be used for lesson programming and open recreational swim. The concept also includes a new tot pool with a ramped entry and spray features and a separate run-out waterslide. The current sprayground will remain.



<b>OPINION OF PROBABLE COST: Franklin 2</b>			
Description	Unit	Amount	Opinion of Cost
Demolition	Allowance	1	\$150,000
Bathhouse		2,388	\$680,607
Aquatic Facility		5,015	\$1,649,250
Tot Pool	Sq. Ft.	715	
Play features	Allowance	1	
6 Lane "L Shaped" Lap Pool	Sq. Ft.	4,300	
Rope Swing	Quantity	1	
Diving Board	Quantity	1	
Waterslide	Quantity	1	
Support		15,045	\$231,822
Outdoor Deck	Sq. Ft.	10,030	
Fence	Linear Ft.	491	
Overhead Lighting	Sq. Ft.	15,045	
Shade Structures	Quantity	3	
Unit		Sq. Ft.	Opinion of Cost
Site Construction Costs (landscaping, drainage, walks)			\$225,675
<b>Total Construction Costs</b>	<b>Sq. Ft.</b>	<b>15,045</b>	<b>2,937,355</b>
Furniture, Fixtures, Equipment			\$82,748
Subtotal			\$3,020,102
Preliminary Design Contingency	5.0%		\$151,005
Inflation (1 Year)	5.0%		\$151,005
Indirect Costs	10.0%		\$317,111
Total Estimated Project Costs:			\$3,639,223
<b>Say</b>			<b>\$3,640,000</b>

## Holly

The Holly pool replacement includes a standard 6-lane lap pool with a 1-meter diving board and a rope swing for the children to play with. A separate leisure pool includes a zero depth entry and a small lazy river that can be used for fitness programs as well as open recreation swim. The concept also includes a run-out family waterslide.



OPINION OF PROBABLE COST: Holly 2			
Description	Unit	Amount	Opinion of Cost
Demolition	Allowance	1	\$150,000
Bathhouse		3,048	\$868,571
Aquatic Facility		6,400	\$2,085,000
Leisure Pool	Sq. Ft.	3,200	
River	Add Cost	1	
6 Lane Lap Pool	Sq. Ft.	3,200	
Rope Swing	Quantity	1	
Diving Board	Quantity	1	
Waterslide	Quantity	1	
Support		19,200	\$285,069
Outdoor Deck	Sq. Ft.	12,800	
Fence	Linear Ft.	554	
Overhead Lighting	Sq. Ft.	19,200	
Shade Structures	Quantity	3	
Unit		Sq. Ft.	Opinion of Cost
Site Construction Costs (landscaping, drainage, walks)			\$288,000
<b>Total Construction Costs</b>	<b>Sq. Ft.</b>	<b>19,200</b>	<b>3,676,641</b>
Furniture, Fixtures, Equipment			\$105,600
Subtotal			\$3,782,241
Preliminary Design Contingency	5.0%		\$189,112
Inflation (1 Year)	5.0%		\$189,112
Indirect Costs	10.0%		\$397,135
Total Estimated Project Costs:			\$4,557,600
<b>Say</b>			<b>\$4,560,000</b>

## Preferred Option Summary

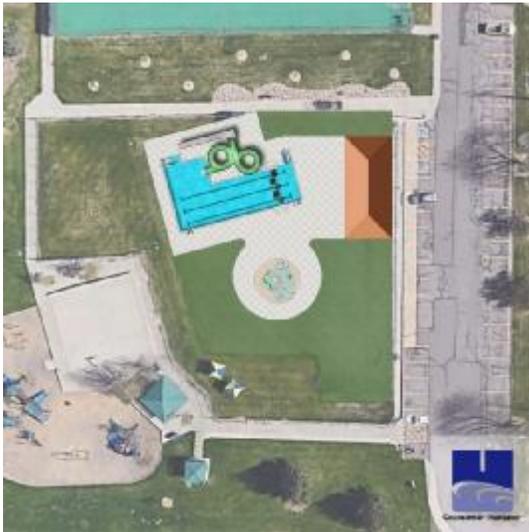
Option	Harlow	Franklin	Holly	Cost
Preferred	3 Lane Lap, waterslide, sprayground	6 lane L-shape pool, tot pool, waterslide	6 lane lap, small leisure pool, waterslide	\$10,500,000

## Phase 1: Expanded

The expanded scenario includes replacement of Franklin, Harlow, and Holly pools, and includes expanding Holly pool to an 8-lane lap pool. The scenario meets all of the needs and desires of the community as shared during the public input meetings.

### Harlow

The Harlow pool replacement includes a shallow water 3-lane lap pool, with a small family waterslide. The pool also includes a crossing activity and a sprayground for the children. The sprayground could be operating beyond the pool season to add an additional amenity to the Harlow park site.



OPINION OF PROBABLE COST: Harlow 3			
Description	Unit	Amount	Opinion of Cost
Demolition	Allowance	1	\$150,000
Bathhouse		1,800	\$513,000
Aquatic Facility		2,600	\$908,500
Sprayground	Sq. Ft.	500	
Play features	Allowance	1	
3 Lane Lap Pool	Sq. Ft.	2,100	
Waterslide w/ Tower	Allowance	1	
Crossing Activity	Quantity	1	
Support		7,800	\$136,995
Outdoor Deck	Sq. Ft.	5,200	
Fence	Linear Ft.	353	
Overhead Lighting	Sq. Ft.	7,800	
Shade Structures	Quantity	3	
Unit		Sq. Ft.	Opinion of Cost
Site Construction Costs (landscaping, drainage, walks)			\$156,000
<b>Total Construction Costs</b>	<b>Sq. Ft.</b>	<b>7,800</b>	<b>1,864,495</b>
Furniture, Fixtures, Equipment			\$42,900
Subtotal			\$1,907,395
Preliminary Design Contingency	5.0%		\$95,370
Inflation (1 Year)	5.0%		\$95,370
Indirect Costs	10.0%		\$200,277
Total Estimated Project Costs:			\$2,298,411
<b>Say</b>			<b>\$2,300,000</b>

## Franklin

The Franklin pool replacement includes a "L-shaped" 6-lane lap pool with a diving board and rope swing. The L shape allows for more intermediate shallow water that can be used for lesson programming and open recreational swim. The concept also includes a new tot pool with a ramped entry and spray features and a separate run-out waterslide. The current sprayground will remain.



OPINION OF PROBABLE COST: Franklin 3			
Description	Unit	Amount	Opinion of Cost
Demolition	Allowance	1	\$150,000
Bathhouse		2,388	\$680,607
Aquatic Facility		5,015	\$1,649,250
Tot Pool	Sq. Ft.	715	
Play features	Allowance	1	
6 Lane "L Shaped" Lap Pool	Sq. Ft.	4,300	
Rope Swing	Quantity	1	
Diving Board	Quantity	1	
Waterslide	Quantity	1	
Support		15,045	\$231,822
Outdoor Deck	Sq. Ft.	10,030	
Fence	Linear Ft.	491	
Overhead Lighting	Sq. Ft.	15,045	
Shade Structures	Quantity	3	
Unit	Sq. Ft.		Opinion of Cost
Site Construction Costs (landscaping, drainage, walks)			\$225,675
<b>Total Construction Costs</b>	<b>Sq. Ft.</b>	<b>15,045</b>	<b>2,937,355</b>
Furniture, Fixtures, Equipment			\$82,748
Subtotal			\$3,020,102
Preliminary Design Contingency	5.0%		\$151,005
Inflation (1 Year)	5.0%		\$151,005
Indirect Costs	10.0%		\$317,111
Total Estimated Project Costs:			\$3,639,223
<b>Say</b>			<b>\$3,640,000</b>

## Holly

In the expanded scenario, the Holly pool replacement includes a larger 8-lane lap pool with a 1-meter diving board and a rope swing for the children to play with. A separate leisure pool includes a zero depth entry and a small lazy river that can be used for fitness programs as well as open recreation swim. The concept also includes a run-out family waterslide.



OPINION OF PROBABLE COST: Holly 3			
Description	Unit	Amount	Opinion of Cost
Demolition	Allowance	1	\$150,000
Bathhouse		3,524	\$1,004,286
Aquatic Facility		7,400	\$2,370,000
Leisure Pool	Sq. Ft.	3,200	
River	Add Cost	1	
8 Lane Lap Pool	Sq. Ft.	4,200	
Rope Swing	Quantity	1	
Diving Board	Quantity	1	
Waterslide	Quantity	1	
Support		22,200	\$323,199
Outdoor Deck	Sq. Ft.	14,800	
Fence	Linear Ft.	596	
Overhead Lighting	Sq. Ft.	22,200	
Shade Structures	Quantity	3	
Unit		Sq. Ft.	Opinion of Cost
Site Construction Costs (landscaping, drainage, walks)			\$333,000
<b>Total Construction Costs</b>	<b>Sq. Ft.</b>	<b>22,200</b>	<b>4,180,485</b>
Furniture, Fixtures, Equipment			\$122,100
Subtotal			\$4,302,585
Preliminary Design Contingency	5.0%		\$215,129
Inflation (1 Year)	5.0%		\$215,129
Indirect Costs	10.0%		\$451,771
Total Estimated Project Costs:			\$5,184,615
<b>Say</b>			<b>\$5,190,000</b>

## Expanded Option Summary

Option	Harlow	Franklin	Holly	Cost
Expanded	3 Lane Lap, waterslide, sprayground	6 lane L-shape pool, tot pool, waterslide	8 lane lap, small leisure pool, waterslide	\$11,130,000

## Phase 1 Option Summary

The following chart shows a comparison of the three options, along with their associated costs:

Option	Harlow	Franklin	Holly	Cost
Minimum	3 Lane Lap, waterslide, sprayground	6 lane lap, tot pool	6 lane lap, small leisure pool	\$9,370,000
Preferred	3 Lane Lap, waterslide, sprayground	6 lane L-shape pool, tot pool, waterslide	6 lane lap, small leisure pool, waterslide	\$10,500,000
Expanded	3 Lane Lap, waterslide, sprayground	6 lane L-shape pool, tot pool, waterslide	8 lane lap, small leisure pool, waterslide	\$11,130,000

*Note: All options include new bathhouse, decking, overhead lights, fencing, and parking lot improvements*

## Phase 2: Future Considerations

Phase 2 includes items that were a top priority to the community, and identified as needs, but were not included within the available funding. It is recommended that these items be further evaluated and considered for future capital projects.

### Cook Creek

Cook Creek is South Suburban's newest and most popular pool. With an 8-lane lap pool and a separate multi-use leisure pool, the facility's only downside it's the limited space available for the numerous user groups. A renovation and expansion to add shade structures, night lighting, and a new 4-lane teaching and programming pool will help maximize the pools usage. The renovation could cost between \$2.5-\$3 million.



### Central Region Aquatic Complex

The current Goodson pool is well used, but is land-locked within the current rec center. This limits the opportunity for expansion. With a new site, dedicated to an aquatic center, a complete aquatic complex could be built to serve all of the needs for the central areas aquatic services. The new facility could offer a 25-yard by 25-meter main pool with deep water for lifeguard training and other deep-water programs, separate therapy pool and a separate warm-water activity pool with waterslides and play amenities. This facility could cost between \$15-\$20 million.



## Ridge Gate East

With the recent acquisition of the Ridge Gate East property, a new aquatic center will be needed to serve this new area of the district. With the high school being a potential user, the need for more indoor training lanes, and considering the current Lone Tree Rec Center Pool, a new training facility would serve this area well. The new pool would include a 25 yard by 25 meter main pool with a separate warm water teaching pool. This new facility would cost between \$12-\$15 million.



### Phase 3: Future System Enhancements

Phase 3 of the aquatic master plan includes items that are considered “nice to have”. They were not identified as immediate needs, but would enhance the overall aquatic system if money were available.

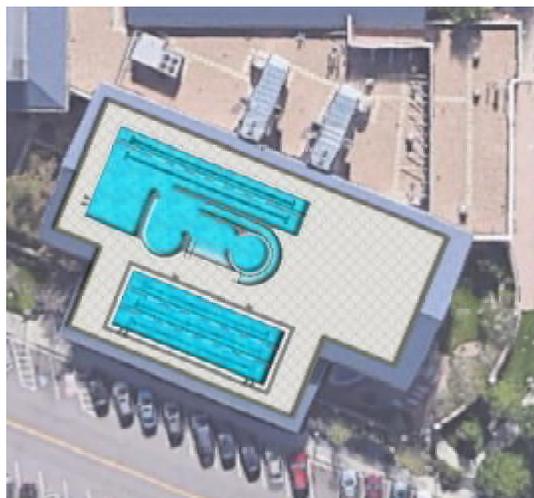
#### Lone Tree Rec Center

The original Lone Tree concept included an indoor lap pool expansion. With the recommendation to include a lap pool during phase 2 in the Ridge Gate East area, a second lap pool is not needed in this area. So, to enhance the family friendly environment offered at the Lone Tree Rec Center, a new outdoor multi-use family pool is recommended.



#### Buck

One of the challenges users currently face with the Buck Recreation Center, is the combination of so many activities within one pool. The lap lanes are kept warm and have a current, because they are attached to the shallow water recreation area. The current pool could be renovated to separate the lap pool and offer three separate pools. This renovation would not change the current therapy pool.



## Next Steps

South Suburban intends to begin construction on two if not all three sites, dependent on direction provided. The district will release a design-build RFP for the replacement of Harlow, Holly, and Franklin pools. The selected team will help determine the best approach for maximizing value and ensuring a timely completion. The goal is to begin demolition of phase 1 in July/August of 2019 with plans to open for summer 2020. If needed, the third site would be demolished in July/August 2020 with plans to open for summer 2021. The goal is to keep the pools open and operational for most of the 2019 season and be ready to open by the start of the 2020 season.

To begin construction at this time, staff and consultants anticipate the following timeline:

- November 2018: Decision and approval from board on project scope.
- December 2018: Project out to bid.
- March 2019: Under contract.
- July 2019: Begin demolition.
- August 2019: Begin construction.
- May 2020: Substantial construction complete.
- June 2020: New pools open to public.

After completion of Phase one. It is recommended to begin looking at sources of funding for Phase 2 and Phase 3 of the Aquatic Master Plan. Further studies and evaluations will need to be completed before a budget can be established.

## Appendix A: Audit Report

# SWIMMING POOL ASSESMENT for the HOLLY, HARLOW AND BEN FRANKLIN POOLS



September 7<sup>th</sup> & 8<sup>th</sup>, 2017



**Counsilman · Hunsaker**  
AQUATICS FOR LIFE

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## *Executive Summary*

The South Suburban Parks and Recreation District commissioned Councilman-Hunsaker to provide a swimming pool assessment for the Holly, Harlow and Ben Franklin Outdoor Pools.

Original construction drawings are dated August 1976 for the Holly Pool, February 1964 for the Ben Franklin Pool and April 1963 for the Harlow Pool. Renovation and additions to the bathhouses at Holly and Ben Franklin have taken place since original construction.

The purpose of the swimming pool assessment is to identify items that are substandard in the pools, identify items not to current industry swimming pool design standards, or equipment not operating as designed, and to assist in defining a course of action regarding the future of the facility. In addition, an opinion of probable construction cost is provided for recommended repairs which will bring the pools up to current industry swimming pool design standards.

Councilman-Hunsaker reviewed facilities on September 7<sup>th</sup> and 8<sup>th</sup>, 2017. Field notes, original design drawings, and photographs were utilized to prepare assessments, preliminary recommendations, and opinions to complete the scope of services outlined in the agreement.

### Goals of the Swimming Pool Assessment:

- Review the outdoor pool systems for deficiencies with regard to current local health code, federal law, and industry standards.
- Prepare a general commentary on support spaces including the equipment areas.
- Prepare specific commentary on any necessary repairs, replacement or restoration of the pool systems, including identification of issues requiring further intensive evaluation and analysis.
- Recommend priority of renovation or replacement of pool systems, (i.e., immediate, remedial, and/or long range, etc.).
- Provide an Opinion of Probable Construction Cost for any modifications, replacements and/or additions required.
- Provide pool replacement options and associated Opinion of Probable Cost for all three facilities.

Should you have any questions or need additional information, please do not hesitate to call or email me at (314) 416-2083 or [carvdennis@chh2o.com](mailto:carvdennis@chh2o.com).

## ***POOL GENERAL INFORMATION***

### ***Holly Lap Pool***

Length 82'-2" (Designed Length)  
Width 75'-0" (Designed Width)  
Surface area 4,779 sq./ft.  
Perimeter 323 L.F.  
Lanes Six 25-Meter Lanes  
Water depth 2'-6" to 12'-0"  
Pool volume 225,905 gal. (Designed Volume)

### ***Holly Tot Pool***

Length 20'-0" (Designed Length)  
Width 18'-0" (Designed Width)  
Surface area 469 sq./ft.  
Perimeter 76 L.F.  
Water depth 1'-0"  
Pool volume 3,000 gal. (Designed Volume)



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*Ben Franklin Lap Pool*

Length 82'-6" (Designed Length)  
Width 75'-0" (Designed Width)  
Surface area 4,455 sq./ft.  
Perimeter 315 L.F.  
Lanes Six 25-Meter Lanes  
Water depth 2'-6" to 12'-0"  
Pool volume 166,000 gal. (Designed Volume)

*Ben Franklin Tot Pool*

Length 24'-0" (Measured Length)  
Width 20'-0" (Measured Width)  
Surface area 480 sq./ft.  
Perimeter 88 L.F.  
Water depth 1'-0"  
Pool volume 4,262 gal. (Designed Volume)



Harlow Lap Pool

Length 82'-6" (Designed Length)  
Width 75'-0" (Designed Width)  
Surface area 4,455 sq./ft.  
Perimeter 315 L.F.  
Lanes Six 25-Meter Lanes  
Water depth 3'-6" to 12'-0"  
Pool volume 165,317 gal. (Designed)

Harlow Tot Pool

Length 26'-0" (Measured Length)  
Width 18'-0" (Measured Width)  
Surface area 468 sq./ft.  
Perimeter 88 L.F.  
Water depth 1'-0"  
Pool volume 3,500 gal. (Estimated)



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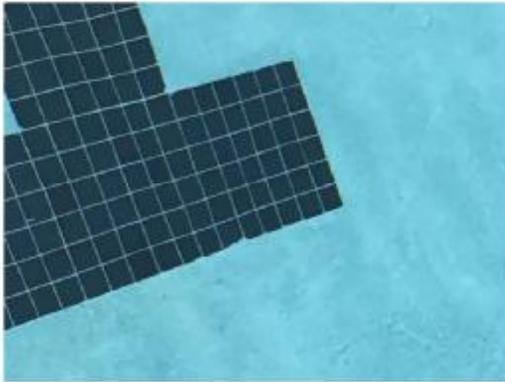
South Suburban Parks and Recreation

*POOL CONDITIONS AND RECOMMENDATIONS*

September 8, 2017

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South Suburban Parks and Recreation



**STRUCTURE AND FINISH – HOLLY POOLS**

The outdoor Lap Pool was designed in 1976 and opened to the public in 1977. At the time of my review, the pool was full of water, so surface observation was limited. For being 40+ years old, the structure appears to be in good condition. However, the pool was re-plastered in 2016. Often, when pools are re-plastered, cracks or concrete separation can be concealed/covered. Water loss was reported, but we cannot determine if the loss is due to the pool structure or the pool piping. The pool structure needs to be isolated from the pool piping system and water/leak tested.

The tot pool plaster finish is in very poor condition. Areas of delamination/flaking are present throughout the surface of the pool. The joint between the precast coping stones and the pool waterline tile varies 1/2" to 1" wide. Pre-Cast coping in cold weather climates will be a continued maintenance item due to freeze/thaw.

The typical lifespan for pool plaster/diamond brite or tile grout is 5 to 8 years for an outdoor pool in a cold weather climate, assuming chemical levels are maintained at acceptable levels.

Water levels in both pool were 4 to 6 inches below required operational levels.

**Recommendation**

**Short Term**

Perform water tightness test on lap pool and tot pool. Pools should be isolated from the pool piping.  
*Opinion of Probable Cost: \$6,000*

Perform pressure testing on lap pool and tot pool piping.  
*Opinion of Probable Cost: \$6,000*

**Long Term**

Re-plaster the tot pool with Diamond Brite  
*Opinion of Probable Cost: \$6,500*

Replace Tot Pool pre-cast coping with Cast-In-Place coping  
*Opinion of Probable Cost: \$15,000*



**STRUCTURE AND FINISH - BEN FRANKLIN POOLS**

The Ben Franklin outdoor Lap Pool was opened to the public in 1964. This pool is a duplicate of the pool at Harlow Park, built a few months prior in 1963. At the time of my review, the pool was full of water, so surface observation was limited. Similar to Harlow, for being 40+ years old, the structure appears to be in adequate condition. However, this pool has been re-plastered in recent years. Often, when pools are re-plastered, cracks or concrete separation can be concealed/covered. Construction drawings show two control/cold joints in the pool floor. These joints have been covered with plaster, which is not recommended. Over time, these joints will move slightly and fracture the pool plaster. Typically, these joints are filled with chlorine resistant caulk and backer rod, allowing flexibility when the concrete shifts.



Water loss was reported, but we cannot determine if the loss is due to the pool structure or the pool piping. The pool structure needs to be isolated from the pool piping system and water/leak tested. A leak testing procedure developed by the American Concrete Institute (ACI 350) is identified at the end of this report. Acceptable water loss per ACI is identified in this procedure. This test should be performed on both the Lap Pool and the Tot Pool.

The tot pool plaster finish appeared to be in good condition. The structure has no major cracking or areas of concern.

The typical lifespan for pool plaster/diamond brite or tile grout is 5 to 8 years, assuming chemical levels are maintained at acceptable levels.

Water levels in both pool were 3 to 4 inches below required operational levels.



**Recommendation**

**Short Term**

Isolate and water test the Lap & Diving Pool and the Tot Pool.

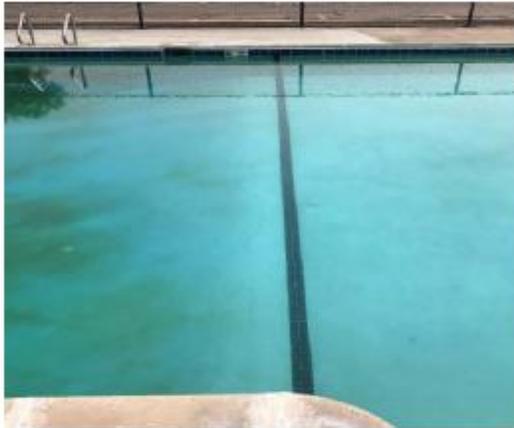
*Opinion of Probable Cost: \$6,000*

**Long Term**

Remove plaster over control joints in the Lap Pool slab and replace with chlorine resistant caulk and backer rod (if needed). Caulk joint should be 3/8" to 1/2" wide with tile edging.

*Opinion of Probable Cost: \$7,800*





**STRUCTURE AND FINISH - HARLOW POOLS**

The Harlow outdoor Lap Pool was opened to the public in 1963/64. At the time of my review, the pool was full of water, so pool surface observation was limited. Pool surface cracking is present in the 54-year-old pool. The pool has been re-plastered with Diamond Brite within the last 3 years. Cracks have reflected through the plaster from the concrete. Water loss was reported, but we cannot determine if the loss is due to the pool structure or the pool piping. The pool structure needs to be isolated from the pool piping system and water/leak tested. A leak testing procedure developed by the American Concrete Institute (ACI 350) is identified at the end of this report. Acceptable water loss per ACI is identified in this procedure. This test should be performed on both the Lap Pool and the Tot Pool.

The Pool decks are in rough shape. Excessive cracking indicates signs of settlement and shifting. Areas of the pool coping have been ground down to bring the back of the coping stone flush with the pool deck.

Pre-cast coping on the Lap and Tot Pools is in very poor condition. Cracks, grinding, separation and excessive remediation due to freeze/thaw have taken a heavy toll on the coping.

**Recommendation**

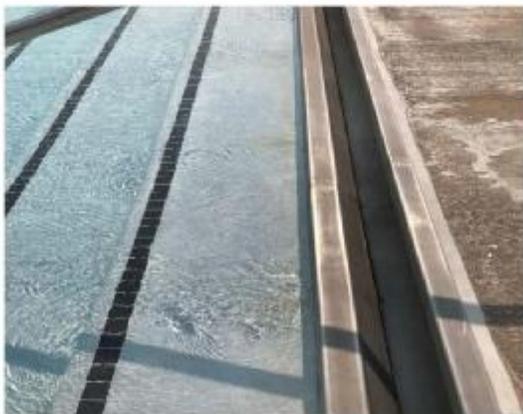
**Short Term**

Isolate and water test the Lap Pool and the Tot Pool.  
*Opinion of Probable Cost: \$6,000*

Replace Pool Decks – See “Pool Deck” section of this report.

**Long Term**

Replace the Lap and Tot Pool coping with cast-in-place coping.  
*Opinion of Probable Cost: \$45,600*



***PERIMETER OVERFLOW SYSTEM  
- HOLLY POOLS***

The Lap Pool stainless-steel gutter system is the original gutter installed in 1976/1977. Pool drawings indicate the stainless gutter system was base bid and a concrete gutter with surge tank was an alternate.

The gutter system appears to be in good shape and has no signs of corrosion or material failure. The pressure return tube is providing equal flow to the perimeter of the pool. The gutter has one drop-out room located approximately 40 feet from the filter room.



Eyelets for the floating lane lines and the safety lines show extensive corrosion. It appears some of these eyelets are replacement parts and not made of stainless steel.

The tot pool has one skimmer that is tied to the Lap Pool gutter system. Current Colorado State Health Codes require the tot pool (Wading Pool) to have its own independent recirculation system.

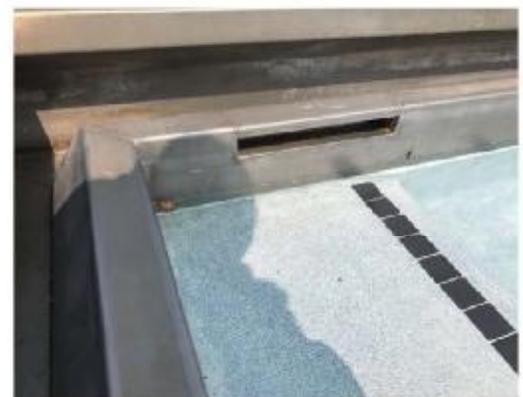
***Recommendation***

**Short Term**

Replace Lap Pool lane line and safety line eyelets  
*Opinion of Probable Cost: \$800*

**Long Term**

Install two (2) new skimmers for the Tot Pool. These skimmers should be tied to a filtration and chemical treatment system dedicated for the tot pool.  
*Opinion of Probable Cost: \$4,700 (Skimmer Install Only)*





***PERIMETER OVERFLOW SYSTEM  
- BEN FRANKLIN POOLS***

The Lap Pool has 9 skimmers serving as the overflow system. Colorado Health Code (5 CCR 1003-5 Part 3.4) requires one skimmer for every 400 square feet of pool surface. The Lap Pool is 4,455 square feet, this results in the need for a total of 12 skimmers. Three (3) additional skimmers are needed to meet code.

Colorado Health Code (5 CCR 1003-5 Part 3.10) requires a minimum 6-hour turnover. Currently, the pool is designed for an 8-hour turnover. The recirculation system had no functioning flowmeters, so flows could not be determined during my review. To meet the required 6-hour turnover, all skimmer suction piping will need to be replaced.

The Tot Pool (Wading Pool) has no surface skimming as required by code. The Tot pool is required to have its own independent recirculation system (including skimmers) per Colorado State Health Codes.

***Recommendation***

**Short Term**

Add three (3) additional skimmers and new skimmer header piping around the perimeter of the pool to the filter room pump pit.

*Opinion of Probable Cost: \$72,000*

**Long Term**

Install two (2) new skimmers for the Tot Pool. These skimmers should be tied to a filtration and chemical treatment system dedicated for the tot pool.

*Opinion of Probable Cost: \$4,700 (Skimmer Install Only)*



***PERIMETER OVERFLOW SYSTEM  
- HARLOW POOLS***

Similar to the Ben Franklin Pool, the Harlow Lap Pool has 9 skimmers serving as the overflow system. Colorado Health Code (5 CCR 1003-5 Part 3.4) requires one skimmer for every 400 square feet of pool surface. With a pool that measures 4,455 square feet, 12 skimmers are needed. The Lap Pool needs three (3) additional skimmers.

Colorado Health Code (5 CCR 1003-5 Part 3.10) requires a minimum 6-hour turnover. Currently, the pool is designed for an 8-hour turnover. The recirculation system had no functioning flowmeters, so flows could not be determined during my review. To meet the required 6-hour turnover, all skimmer suction piping will need to be replaced.

The Tot Pool (Wading Pool) has one skimmer that is tied to the Lap and Diving Pool. The Tot pool is required to have its own independent recirculation system (including skimmers) per Colorado State Health Codes.

***Recommendation***

**Short Term**

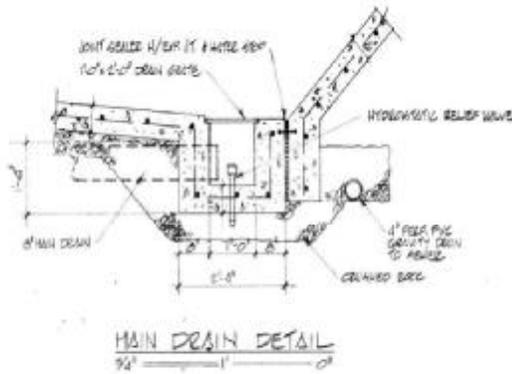
Add three (3) additional skimmers and new skimmer header piping around the perimeter of the pool to the filter room pump pit.

*Opinion of Probable Cost: \$72,000*

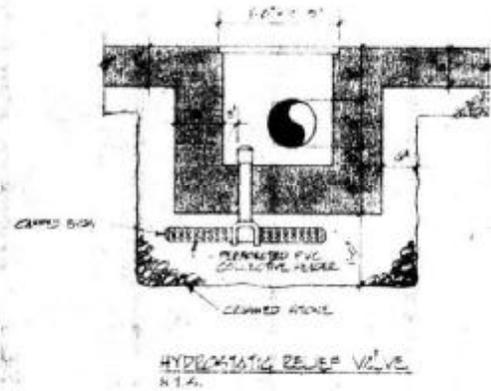
**Long Term**

Install two (2) new skimmers for the Tot Pool. These skimmers should be tied to a filtration and chemical treatment system dedicated for the tot pool.

*Opinion of Probable Cost: \$4,700 (Skimmer Install Only)*



**MAIN DRAIN DETAIL**  
3/4" 1" 0"



**HYDRAULIC RELIEF VALVE**  
N.T.S.

**MAIN DRAINS – HOLLY POOLS**

Per design drawings, two separate main drains have a single 6" pipe in each main drain that intersects below the pool into a single 8" pipe. The 8" pipe is routed into the filter room where it is routed through the old "dry" pump pit. Pipe sizing is based upon an 8-hour turnover. As noted previously in this report, Colorado Health Code requires a 6-hour turnover.

At the time of my review, the main drains were not accessible due to water in the pool. Pool staff relayed to me that Virginia Graeme Baker compliant main drain covers have been installed. Documentation of the main drain covers and inspection approval is required to be on file at the pool location.

No main drains exist within the Tot Pool. This is a violation of current Colorado Health Codes.

**Recommendation**

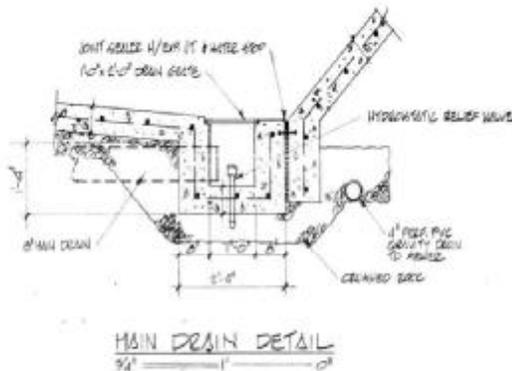
**Short Term**

To bring the main drains and associated piping up to date with current Colorado Health Codes and industry standards, the main drains will need to be replaced with larger sumps and increased pipe sizes.  
*Opinion of Probable Cost: \$21,600*

Install two (2) main drains and associated piping as required by code to a dedicated recirculation system for the Tot Pool.  
*Opinion of Probable Cost: \$38,400*

**Long Term**

No Long-Term Action Needed



**MAIN DRAINS – BEN FRANKLIN POOLS**

Per design drawings, two separate main drains have a single 3” pipe in each main drain that intersects below the pool into a single 4” pipe. The 4” pipe is routed into the filter room where it is routed through the pump pit. Pipe sizing is based upon an 8-hour turnover and is undersized to meet the 347 GPM flow rate. Current Colorado Health codes allow a velocity of 7 feet per second for suction piping. The 347 GPM exceeds this allowable rate. Additionally, the Model Aquatic Health Code which will soon be adopted by Colorado Health officials, allows only 6 feet per second velocity.

At the time of my review, the main drains where not accessible due to water in the pool. Pool staff relayed to me that Virginia Graeme Baker compliant main drain covers have been implemented/installed. Documentation of the main drain covers and inspection approval is required to be on file at the pool location.

No main drains exist within the Tot Pool. This is a violation of current Colorado Health Codes.

**Recommendation**

**Short Term**

To bring the main drains and the recirculation system up to date with current Colorado Health Codes and industry standards, the main drains will need to be replaced with larger sumps and increased pipe sizes.

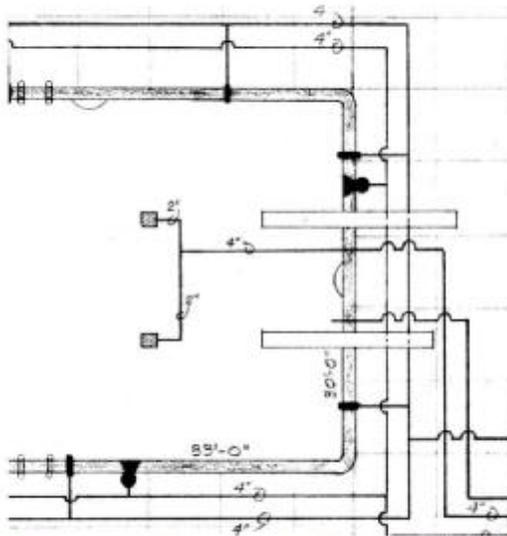
*Opinion of Probable Cost: \$38,400*

Install two (2) main drains and associated piping as required by code to a dedicated recirculation system for the Tot Pool.

*Opinion of Probable Cost: \$38,400*

**Long Term**

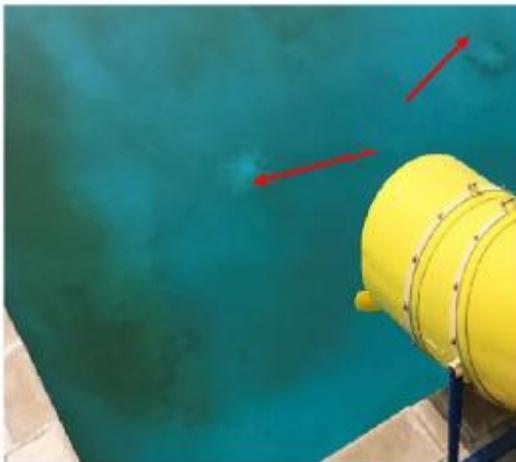
See the “Conclusions and Summary” portion of this report.



**MAIN DRAINS – HARLOW POOLS**

Per design drawings, two separate main drains have a single 3” pipe in each main drain that intersects below the pool into a single 4” pipe. The 4” pipe is routed into the filter room where it is routed through the pump pit. Pipe sizing is based upon an 8-hour turnover and is undersized to meet the 347 GPM flow rate. Current Colorado Health codes allow a velocity of 7 feet per second for suction piping. The 347 GPM exceeds this allowable rate. Additionally, the Model Aquatic Health Code which will soon be adopted by Colorado Health officials, allows only 6 feet per second velocity.

At the time of my review, the main drains where not accessible due to water in the pool. Pool staff relayed to me that Virginia Graeme Baker compliant main drain covers have been installed. Documentation of the main drain covers and inspection approval is required to be on file at the pool location.



No main drains exist within the Tot Pool. This is a violation of current Colorado Health Codes.

**Recommendation**

**Short Term**

To bring the main drains and the recirculation system up to date with current Colorado Health Codes and industry standards. The main drains will need to be replaced with larger sumps and increased pipe sizes.

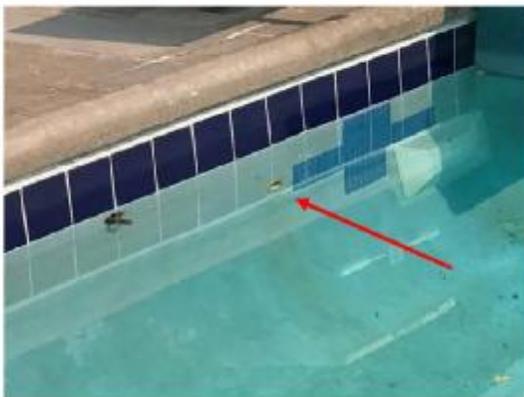
*Opinion of Probable Cost: \$38,400*

Install 2 main drains and associated piping as required by code to a dedicated recirculation system for the Tot Pool.

*Opinion of Probable Cost: \$38,400*

**Long Term**

See the “Conclusions and Summary” portion of this report.



***POOL INLETS – ALL POOLS***

The Holly Pool utilizes a pressure tube as a part of the stainless-steel gutter to return the treated water to the pool. The pressure tube has small holes at the base of the gutter system that are evenly spaced around the perimeter of the pool.

The Harlow and Ben Franklin Pools utilize wall inlets that are embedded in the pool walls approximately 20 ft. apart. Colorado Health Code 5 CCR 1003-5 – Part 3.5 require wall inlets to be placed a maximum of 15 ft. apart.

Additionally, the Harlow and Ben Franklin Pools currently have an 8+ hr. turnover. Colorado Code requires a minimum 6 hr. turnover. Both pools have a current flow of 347 gpm and a total volume of 166,234. To meet the required turnover of 6 hrs., the flow rate would need to increase to 461 gpm.

The Tot Pools at all three locations require their own recirculation and water treatment system and “at least” two (2) inlets and two (2) main drains.

***Recommendation***

**Short Term**

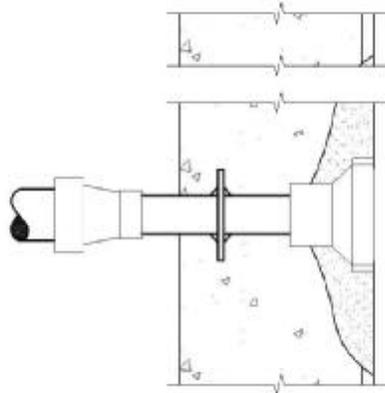
Install two (2) inlets at each tot pool location.  
*Opinion of Probable Cost: \$38,400 (per site) (includes deck replacement for pipe routing)*

Add additional wall inlets to the Harlow and Ben Franklin Pools to meet wall inlet maximum allowable distance requirement.

*Opinion of Probable Cost: \$62,400 (per site) (includes deck replacement at wall inlets locations)*

**Long Term**

No long-term action needed.





***POOL MARKINGS – ALL POOLS***

The Lap Pools at Harlow and Ben Franklin and the Harlow Tot Pool have vertical tile depth markers and vertical no diving signs. The Holly Lap and Diving Pool has no vertical markers on the stainless-steel gutter. Deck Markings on all pools is minimal at best. All deck markings are painted and sporadically placed. Many are faded and barely legible.

Industry Standards and the Model Aquatic Health Code requires No Diving Markers on the pool deck and pool wall adjacent to the depth markers on all depths 5 feet or shallower. Currently, these do not exist on any of the Tot Pool OR on the pool decks of any of the Lap Pools.

*Colorado Health Code - 5 CCR 1003-5 - 3.1*  
 Depth markers shall be a minimum of four (4) inch numerals in a contrasting color on the deck, and four (4) inch numerals in a contrasting color on the vertical wall at or above water level. The dimensions of the pool in the diving area shall conform to the following table. (This drawing does not show shallow portions of the pool.)

***Recommendation***

**Short Term**

Add Tile Depth Markers and NO DIVING Markers to the pool decks at Holly, Ben Franklin and Hallow pools

*Opinion of Probable Cost: \$7,200 (per facility)*

**Long Term**

No Action Required.



**POOL DECKS – ALL POOLS**

*The Holly Pool decks are in good shape and appear to have no major defects. The minor cracking and control joints have been addressed with new caulking. There are no toe-stubbers or heaving/settling deck slabs.*

*The Ben Franklin Pool decks are in adequate shape considering they are 53 years old. There are numerous areas where the deck has been patched or repaired. Additionally, there are locations where the deck slab joints are not even and create small trip hazards. The pool coping is integral with the deck slab making remediation or replacement very difficult. The deck area near the Tot Pool is in good condition.*



*The Harlow Pool decks are in poor condition. The decks surrounding the Lap Pool are fractured/cracked at countless locations. There are many areas where the deck has settled and the exposed concrete edge has been ground down to avoid tripping hazards. This deck will continue to settle and fracture as they age due to settling and saturated subgrade soils. The water loss of the pool could be contributing to this issue.*



**Recommendation**

**Short Term**

Continue to caulk and seal pool decks on an annual or bi-annual basis

*Opinion of Probable Cost: \$4,000 (per location)*

**Long Term**

Harlow Pool and Ben Franklin Pools - Replace pool decks around Lap & Diving Pool.

*Opinion of Probable Cost: Harlow -\$72,000 Ben Franklin \$90,000*



***DIVE STAND - ALL POOLS***

Currently, all three locations have one (1) 1-meter dive stand that is installed on the pool deck at the deep end of the pool. At the time of original construction, there was also a 3-meter dive stand. The 3-meter stands were replaced with drop slides. The dive stands at Holly and Ben Franklin are Durafirm dive stands with Duraflex dive boards. The dive stand at Harlow is a Paragon stand with a Durflex dive board.

The dive stands are showing signs of wear and tear with delamination of the coating systems. Mechanically, the fulcrum at Harlow is not adjustable due to wear on the gear track.



***Recommendation***

**Short Term**

Remove and store the dive boards during the offseason.

**Long Term**

Sandblast and re-coat the dive stands at all three locations with an epoxy paint or powder-coating system. (refer to manufacturer)

*Opinion of Probable Cost: \$4,200 (per location)*

Replace dive stand fulcrum at Harlow.

*Opinion of Probable Cost: \$3,000*





#### *STARTING PLATFORMS - ALL POOLS*

Starting platforms and starting platform anchors at all locations are located at water depths of 3'-6" to 4'-0". The Model Aquatic Health Code notes that platforms should be located over pool depths at a minimum of 4'-0". USA Swimming notes that starting platforms should be located at a minimum water depth of 6'-7".

#### *Recommendation*

##### **Short Term**

Remove starting platforms and anchors at water depth less than 4'-0".

*Opinion of Probable Cost: \$4,000*

##### **Long Term**

No Action Needed.



*POOL MECHANICAL CONDITIONS AND RECOMMENDATIONS*



**PIPING / VALVES – ALL POOLS**

Valve hardware, pipe hangers, pipe supports and anything of mild steel within the filter rooms are showing signs of corrosion and decay. The primary culprit is the lack of proper ventilation.

Harlow Pool – Original pool drawings note that all under pool piping and piping embedded in the pool walls is copper. After 54 years I have reservations that the piping openings are at full capacity. The result would be reduced flow rates. All pool piping appears to be Sch 40 PVC and has been repaired in numerous locations. Per Colorado State Health Codes, the Model Aquatic Health Code and industry standards, all pool piping is undersized to meet required turnover rates.



Ben Franklin Pool - Main drain and skimmer suction pipe connections in the pump pit of the filter room are made with repair couplings. Repair couplings are low-pressure EPDM intended to be used on non-pressure piping. All pool piping appears to be Sch 40 PVC and has been repaired in numerous locations. Per Colorado State Health Codes, the Model Aquatic Health Code and industry standards, all pool piping is undersized to meet required turnover rates.

Holly Pool – Filter room piping is a combination of Sch. 40, Sch. 80 PVC and copper. There are numerous injection points that have been relocated and modified.



**Short Term**

Replace all valve hardware with new stainless-steel hardware.

*Opinion of Probable Cost: \$2,500*

Replace all corroded pipe hanger and supports in filter room with fiberglass or epoxy coated hangers, unistrut and hardware.

*Opinion of Probable Cost: \$3,500*

**Long Term**

If pools are brought up to current codes, filter room piping will need to be resized and replaced.

*Opinion of Probable Cost: \$15,000 (per location)*



#### ***PUMPS / MOTORS – ALL POOLS***

The current pool recirculation pumps & motors for the Holly, Ben Franklin and Harlow pool locations have operational parameters of 10 H.P., 2,800 RPM. The pumps do not have identifications tags, therefore flow or TDH could not be verified. The motors appear to have been replaced within the past few years. However, the age of the pumps could not be confirmed.

Compound and pressure gauges are not located on the influent or effluent sides of the pumps. These gages are required per industry standards to measure the effectiveness and flow the pump is producing.

Pumps at all three locations are not properly supported. Wood, rocks and decaying anchor bolts currently support the pumps and strainers.

Intake and discharge flange hardware is galvanized. Corrosion exists at these locations. Stainless steel hardware is highly recommended.

#### ***Recommendation***

##### **Short Term**

Install compound and pressure gauges on all pool pumps.  
*Opinion of Probable Cost: \$300 (per pump)*

Install concrete housekeeping pads under pumps and hair and lint strainers.  
*Opinion of Probable Cost \$600 (per location)*

##### **Long Term**

If pools are brought up to code to meet the required 6-hour turnover, larger pumps and strainers will be required.

*Opinion of Probable Cost \$6,600 (per locatton)*





### *FILTRATION – ALL POOLS*

The Holly, Ben Franklin and Harlow facilities all have the same filtration system manufactured by Swintime. These are all steel high rate sand filtration systems that are sized for an 8-hour turnover. The Swintime filters are not the original filters for these facilities. The installation dates of these filters are unknown. It's important to note that Swintime filters are not NSF approved, which is a Colorado Health Department requirement.

Pool staff was uncertain as to when the filter sand was last changed. Typically, filter sand requires replacement every 8 to 10 years based upon use and the amount of sand lost during the backwash processes.



Steel filters are typically coated with an epoxy or flexol coating on the inside and outside surfaces to prevent corrosion. This coating requires replacement every 10 to 15 years, based upon use and wear. The filters at Harlow and Holly both show external signs of corrosion. The internal areas of the filters could not be inspected since they were in operation at the time of my review.

### *Recommendation*

#### Short Term

Re-coat external surfaces of the filters.  
*Estimate: \$2,000 per location*

Re-coat internal surfaces of the filters.  
*Estimate: \$3,500 per location*

#### Long Term

Replace filters with horizontal fiberglass filters that are NSF approved and meet the required 6 hour turn over for the Lap Pools.

*Opinion of Probable Cost \$62,000 per location*

Install filtration systems for the Tot Pools at each location. Filters are required to meet a 1 hour turnover for Tot Pools (Wading Pool) per Colorado Health Code.

*Opinion of Probable Cost \$14,000 per location*





### ***CHEMICAL TREATMENT – ALL POOLS***

The sanitizer of choice for all three pools is sodium hypochlorite. The chlorine is stored in bulk tanks and pumped to the recirculation system via Stenner chemical pumps. The chlorine is routed through 1/4" and 3/8" poly tubing and connected to the pool piping with threaded fittings drilled into the pipe.

The Co2 feed systems for each pool is a Strantrol Co2 Adjustable Rate Feed system utilizing a 450 lbs. bulk storage tank. These systems were not feeding chemical at the time of my review since the pools had been closed for the season.

All three facilities have a BECSys3 chemical controller that has been installed in recent years. This controller appeared to be functioning as required and needed.

Corrosion of all steel components is present within all the filter rooms due the open containers of sodium hypochlorite.

#### ***Recommendation:***

##### **Short Term**

Install 1/2" Sch. 80 PVC with shutoff and check valves for chemical feed systems. This would eliminate the constant leakage and replacement of the poly tubing.  
*Opinion of Probable Cost \$3,000 (per location)*

Install Y-strainers on the chemical controller feed line to block particulate from the flow cell.  
*Opinion of Probable Cost \$200 (per location)*

Install connection points on the Sodium Hypochlorite tanks to connect the chemical piping. This will eliminate leaving the lids off the tanks and allowing corrosive fumes to escape into the mechanical room.  
*Opinion of Probable Cost: \$300 (per location)*



***FLOW METERS – ALL POOLS***

Recirculation and backwash flowmeters were inoperable at the time of my review. Impact flowmeters are notorious for sticking and malfunctioning after a short period of time due to particulate or debris affecting the float. Continuous flow monitoring is required per Colorado Health Code 5 CCR 1003-5 Item 3.10.

Tot Pools are required to have independent recirculation systems with flow monitoring.

***Recommendation***

**Short Term**

Install a magmeter-flowmeter with a totalizer that can identify the designed flow of the filtration system.

*Opinion of Probable Cost: \$2,500 (per pool)*

Install an impact flowmeter on the backwash piping to verify designed backwash rate (See picture – Lower left)

*Opinion of Probable Cost: \$500 (per pool)*

**Long Term**

No Action Required.





**MISCELLANEOUS ITEMS - ALL POOLS**

**ADA Accessibility**

The Lap Pools at all three locations “require” at least 2 means of access per ADA regulations. This can be accomplished with Pool Lifts (permanent), Pool Ramps (portable or permanent) or Accessible Stairs (portable or permanent).

Due to their size, the tot pools at all three locations require only one (1) means of ADA access. This can be accomplished with a pool lift.

To meet these requirements, additional rails that meet ADA regulations can be added to the stair entries at the Holly and Ben Franklin pools. This would account for a single access point. Pool lifts will need to be added to account for a second ADA entry point.

The Harlow Pool will need to add a portable stair entry (most economical) and a pool lift.

**Recommendation**

**Short Term**

Install a new battery or water powered Pool Lift for ADA accessibility.

*Opinion of Probable Cost: \$8,600 (per pool)*

Add new stair rails and anchors to Holly and Ben Franklin Pools

*Opinion of Probable Cost: \$4,500 (per location)*

Add portable stair to Harlow Pool

*Opinion of Probable Cost: \$4,200*

**Long Term**

No long-Term Action Needed.





## MISCELLANEOUS ITEMS - ALL POOLS

### Waterslides

The large waterslides at Harlow and Ben Franklin Pools are showing their age. Pool staff was not certain as to when they were installed. There are numerous areas where the fiberglass gel-coating has been patched and repaired. In many areas, the gel-coating is cracked to the extent where major repairs are needed. A slide manufacturer needs to review and confirm if the slide fiberglass is even repairable. It appears a hail storm may have occurred and intensified the damage.

The Harlow and Ben Franklin slides also need to have the slide seams caulked. This should be a bi-annual maintenance item.

The small drop slides at all pool locations are in good condition.

### Recommendation

#### Short Term

Re-caulk slide seams on large slides at Harlow and Ben Franklin Pools.

*Opinion of Probable Cost: \$3,500 (per location)*

#### Long Term

Re-Gelcoat large slides at Harlow and Ben Franklin Pools.

*Opinion of Probable Cost: \$25,000 (per location)*

## ***WATER TIGHTNESS TESTING***

The following procedure is designated for the testing pool concrete design based upon ACI 350 (American Concrete Institute). The Holly, Franklin and Harlow pools were not designed based upon this requirement. However, this tool can be used to test the pools and verify water loss (if any).

### WATER TIGHTNESS TEST

- A. This test applies to the pools and the gutter systems.
- B. Water Tightness Test Procedure
  1. Isolate the pool by plugging all pipe penetrations into the pool (Main Drains, Wall Inlets, Floor Inlets, Skimmers and Underwater Lights)
  2. Fill: Fill and then isolate the pool and the gutter system. The water tightness test shall begin after the vessel has been filled for a minimum of three (3) days. During the filling, all outlets shall be monitored for water tightness and all concrete joints shall be monitored for any visible leakage. If any visible leakage from the vessel is observed, the condition shall be corrected prior to the start of the test.
    - a. After the initial fill, all ground water shall be removed from the pool sight sump or the pool location de-watering system. This shall be completed prior to the start of the water tightness test. De-watering of the pool sight sump shall be maintained during the entire duration of the test.
  3. Evaporation/Precipitation Measurement Procedure
    - a. Fill a floating, restrained, partially filled, calibrated, open container with water and allow the container to float within the pool during the testing period. This will be used to measure evaporation and precipitation.
  4. Measurement
    - a. On a separate sheet of paper draw a sketch of the pool. Measurements shall be taken at the pool(s). Multiple test points with averaging are recommended for vessels which will be exposed to wind. Document the separate findings on the chart below. Repeat the measurements and document every 12 hours for a total of three (3) days. The General Contractor shall check the pool(s) water loss with the Architect or Owner's representative every 12 hours.

Total Allowable Water Loss:	Total Gallons:	_____	(0.1%) x 0.001 = _____	Allowable Loss	Pan Depth Per 24 Hrs.
Pool Measurements	Lap & Diving Pool	Tot Pool	Gutter System (Holly Pool)		Pan Measurements
12 Hrs.					
24 Hrs.					

36 Hrs.					
48 Hrs.					
60 Hrs.					
72 Hrs.					

5. Total Loss = 7.481 x Structure Surface Area (SF) x Total Water Loss per Day (FT) – Evaporation per Day (FT) + Precipitation per Day (FT)

- a. Day #1 =
- b. Day #2 =
- c. Day #3 =

6. Repair

- a. The allowable leakage rate for an unlined pool structure shall not exceed 0.1 percent of the total water volume in a 24-hour period. (Example: 0.001 x 200,000-gallon pool = 200 gallons per 24-hour period.) This excludes the loss/addition of evaporation/precipitation.

7. Evaporation

- a. Evaporation shall not have a significant effect on natatoria that are completely enclosed with no air circulation during the water tightness test. However, evaporation will have a significant effect on the water level in natatoria that has air movement across the water surface or are still partially uncovered.

8. If leaks are detected, repair the vessel and make water tight in accordance with these requirements

## OPINION OF PROBABLE CONSTRUCTION COST

The following table is a summary of items listed throughout this report and provides a total Opinion of Probable Construction (OPC) Cost for correction of deficiencies and potential improvements. The opinion of probable construction cost does not include architectural and engineering design fees (if needed) or inflation until the items are addressed.

Estimated Construction Cost		Project Name: South Suburban Parks and Rec. - Holly, Ben Franklin and Harlow Pools					
		Date: September 8, 2017					
Item	Holly Pool		Ben Franklin Pool		Harlow Pool		
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	
1 Perform Water Tightness Test	\$ 6,000.00		\$ 6,000.00		\$ 6,000.00		
2 Perform Piping Pressure Test	\$ 6,000.00		\$ 6,000.00		\$ 6,000.00		
3 Replaster Tot Pool		\$ 6,500.00		\$ 6,500.00			
Control joints - Remove plaster and install caulk joints with tile edging				\$ 7,800.00			
4 Replace Tot Pool Coping		\$ 15,000.00					
5 Replace Lap & Diving Pool Coping						\$ 25,600.00	
6 Replace Stainless Steel Gutter Eyelets	\$ 800.00						
7 Install Skimmers at Tot Pool		\$ 4,700.00		\$ 4,700.00			
8 Install Additional Skimmers on Lap Pool			\$ 72,000.00		\$ 72,000.00		
9 Update Main Drains and Main Drain Piping in Lap & Diving Pool	\$ 21,000.00		\$ 38,400.00		\$ 38,400.00		
10 Install Main Drains and Associated Piping for Tot Pools	\$ 38,000.00		\$ 38,400.00		\$ 38,400.00		
11 Install Pool Inlets and Associated Piping in Tot Pool	\$ 38,400.00		\$ 38,400.00		\$ 38,400.00		
12 Install additional Wall Inlets in Lap Pool	\$ -		\$ 62,400.00		\$ 62,400.00		
13 Install Deck Tile Depth Markers and Warning Signs	\$ 7,200.00		\$ 7,200.00		\$ 7,200.00		
14 Caulk Pool Dado	\$ 4,000.00		\$ 4,000.00		\$ 4,000.00		
15 Install New Pool Dado - (price could vary based upon other remediation)				\$ 90,000.00		\$ 72,000.00	
16 Re-Coat Dive Stands		\$ 4,200.00		\$ 4,200.00		\$ 4,200.00	
Replace dive stand fulcrum						\$ 3,000.00	
Remove starting platform anchors located above water depths less than 4'-0"	\$ 4,000.00		\$ 4,000.00		\$ 4,000.00		
17 Replace valve hardware and pipe hangers in filter rooms	\$ 6,000.00		\$ 6,000.00		\$ 6,000.00		
18 Replace Filter Room Piping	\$ -	\$ 15,000.00		\$ 15,000.00		\$ 15,000.00	
19 Install Pool Pump Hose/keeping Pads and Pressure/Compound Gages	\$ 900.00		\$ 900.00		\$ 900.00		
20 Install New Pool Pumps & Strainers	\$ -	\$ 8,800.00	\$ -	\$ 8,800.00		\$ 8,800.00	
21 Re-coat existing filters (inside and outside)	\$ 5,500.00		\$ 5,500.00		\$ 5,500.00		
22 Install New Filters for Lap Pools		\$ 82,000.00		\$ 82,000.00		\$ 82,000.00	
23 Install Tot Pool Filtration System		\$ 14,000.00		\$ 14,000.00		\$ 14,000.00	
24 Install New Chemical Treatment Piping	\$ 3,000.00		\$ 3,000.00		\$ 3,000.00		
25 Install Chemical Controller & Strainers	\$ 200.00		\$ 200.00		\$ 200.00		
26 Install Chemical Connection Points	\$ 300.00		\$ 300.00		\$ 300.00		
27 Install Magmeter Flowmeters	\$ 2,500.00		\$ 2,500.00		\$ 2,500.00		
28 Install Backwash Impact Flowmeters	\$ 500.00		\$ 500.00		\$ 500.00		
29 Install Pool Lift (2 per location)	\$ 17,200.00		\$ 17,200.00		\$ 17,200.00		
30 New Pool Stair Rails for ADA Accessibility	\$ 4,500.00		\$ 4,500.00				
31 New Portable Stair for ADA Accessibility	\$ 4,200.00						
32 Re-Caulk Slide Seams	\$ 3,500.00		\$ 3,500.00		\$ 3,500.00		
33 Re-Gelcoat Large Slides				\$ 25,000.00		\$ 25,000.00	
	Short Term Total: \$ 178,700.00		\$ 820,900.00		\$ 816,400.00		
	Long Term Total: \$ 128,000.00		\$ 235,800.00		\$ 247,400.00		

The opinion of probable construction costs is based on current 2017 costs. This report is based on information that was current as of August 2017

The preceding opinion of probable construction costs is based on a protocol in which a general contractor or swimming pool contractor executes all the tasks with its own labor and that of qualified subcontractors.

It is recognized that the Consultant has no control over the cost of labor, materials or equipment, over the Contractor's methods of determining bid prices, or over competitive bidding, market or negotiating conditions. Accordingly, the Consultant cannot, and does not, warrant or represent that bids or negotiated prices will not vary from the Owner's project budget or from any opinion of probable construction cost or evaluation prepared or agreed to by the Consultant.

**Respectfully,**

A handwritten signature in cursive script, appearing to read "Cary A. Dennis".

**Cary A. Dennis M.S.M.E.**

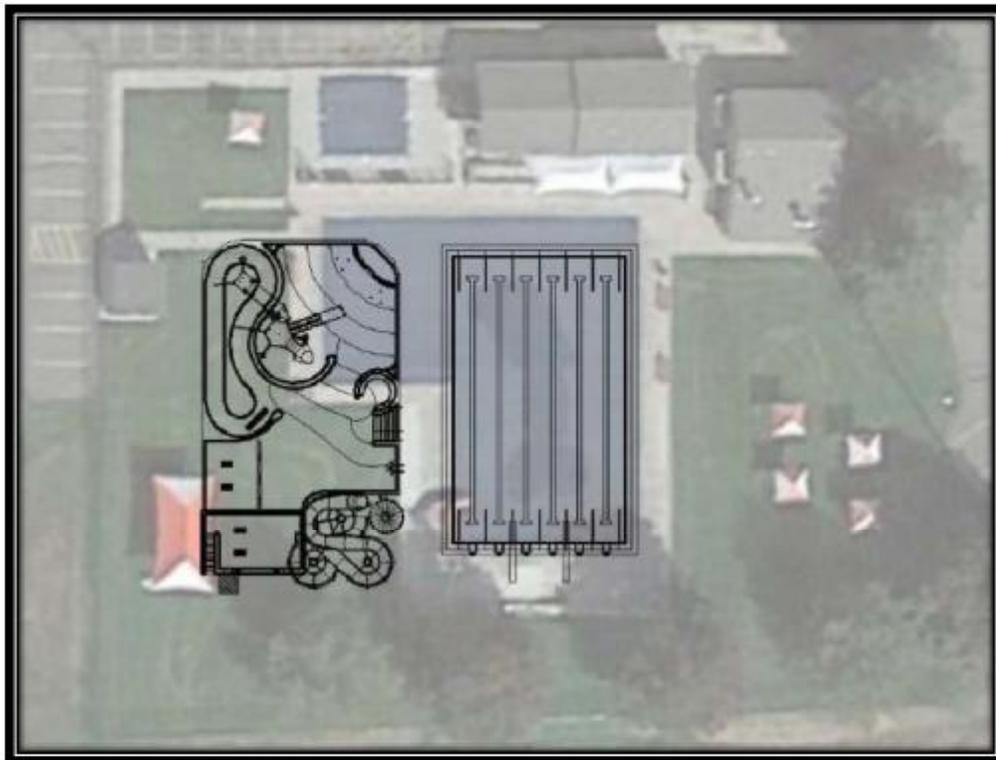
## ***REPLACEMENT CONSIDERATIONS***

As noted during our on-site meeting, Councilman Hunsaker is providing the following overlays as suggestions for replacements to the aging pools at the Holly, Ben Franklin and Harlow locations. Numerous and costly issues are outlined within this report that supports the consideration of complete pool replacement. The pricing noted below are budget numbers for the pool only, and do not include demo, soil remediation (if needed) and engineering/architectural fees.

### **Holly Pool**

**Lap Pool (3,378 sq. ft.)** - Six (6) lane 25 Meter Pool 4'-0" to 12'-0" Deep with two (2) One Meter Dive Stands – *Opinion of Probable Cost: \$945,000*

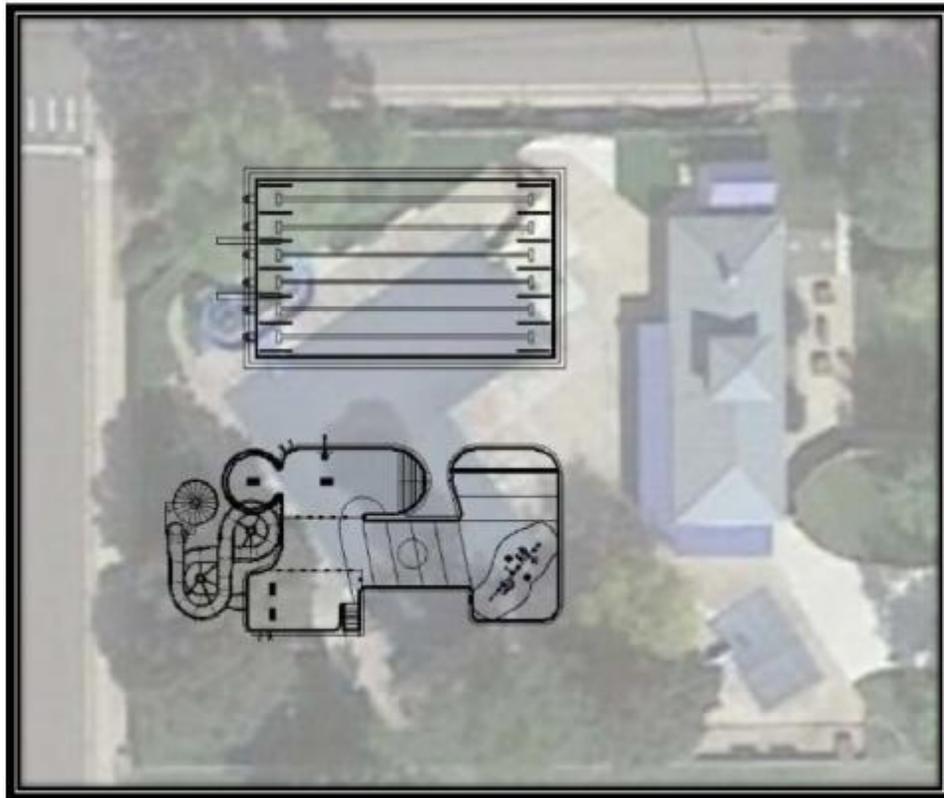
**Leisure Pool (3,225 sq. ft.)** - Zero entry leading to a medium sized interactive play structure that bridges over a 100 ft. long lazy river. Additionally, the pool has a underwater bench area, spray features and water volleyball at a maximum depth of 3'-6". The water slide dumps riders into a splashdown area that can be used as an instructional area for exercise or therapy classes. Slide length are approximately 125 ft. with a tower height of 20 to 25 ft. *Opinion of Probable Cost: \$1,350,000 (including slide and features)*



## Ben Franklin Pool

**Lap Pool (3,378 sq. ft.)** - Six (6) lane 25 Meter Pool 4'-0" to 12"-0" Deep with two (2) One Meter Dive Stands. *Opinion of Probable Cost: \$945,000*

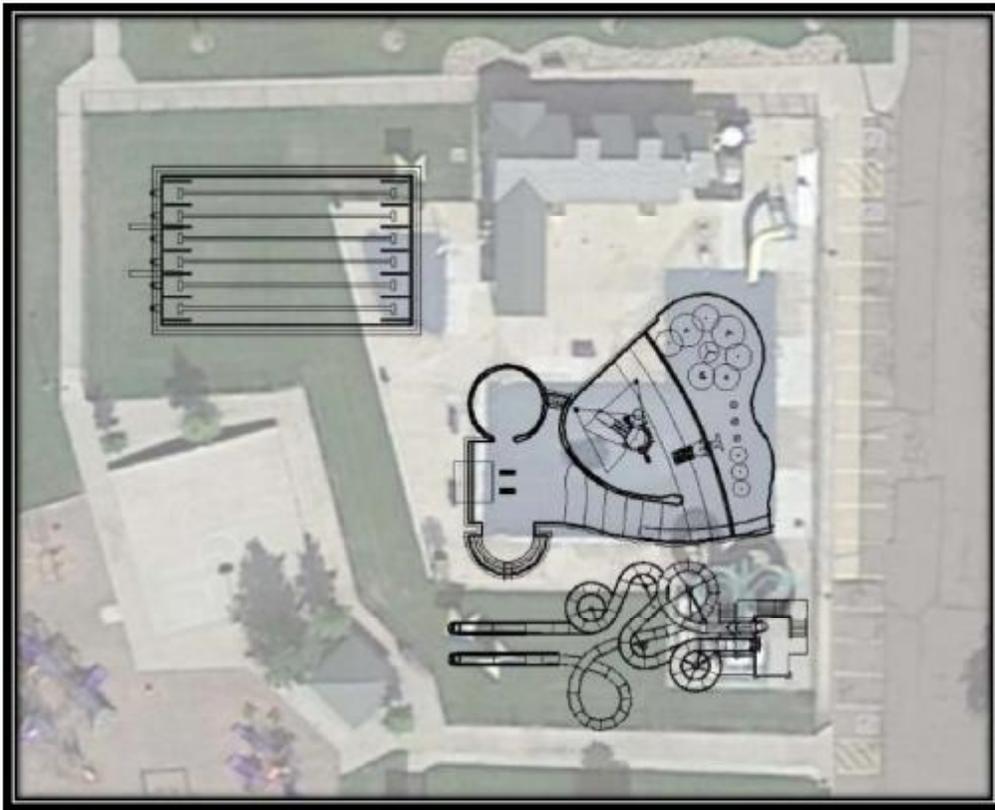
**Leisure Pool (2,774 sq. ft.)** – Zero entry with bubblers leading to a small interactive play feature. The pool continues to a maximum depth of 3'-6" with a vortex feature and underwater benches. The water slide dumps riders into a splashdown area that can be used as an instructional area for exercise or therapy classes. Slide length are approximately 100 ft. with a tower height of 15 to 20 ft. *Opinion of Probable Cost: \$1,120,000 (including slide and features)*



## Harlow Pool

**Lap Pool (3,378 sq. ft.)** – Six (6) lane 25 Meter Pool 4'-0" to 12'-0" Deep with two (2) One Meter Dive Stands. *Opinion of Probable Cost: \$945,000.*

**Leisure Pool (3,559 sq. ft.)** – Spray pad zero entry leading to a medium sized interactive play structure and separate tot slide. The pool continues to a maximum depth of 3'-6" with a vortex feature, underwater benches and additional spray features. The waterslides are open and closed flumes slides with deck mounted runouts. Slide lengths are approximately 125 to 150 ft. with a tower height of 30 to 35 ft. *Opinion of Probable Cost: \$1,580,000 (including slide and features)*

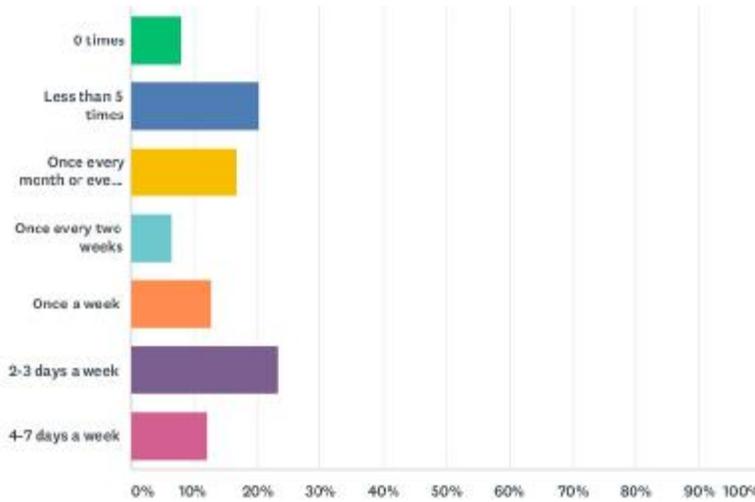


# Appendix B: South Suburban Aquatics Master Plan Survey

## South Suburban Aquatics Master Plan Survey

Q1 For the past year, select which best describes your household's average visits to an indoor aquatics facility?

Answered: 962 Skipped: 0

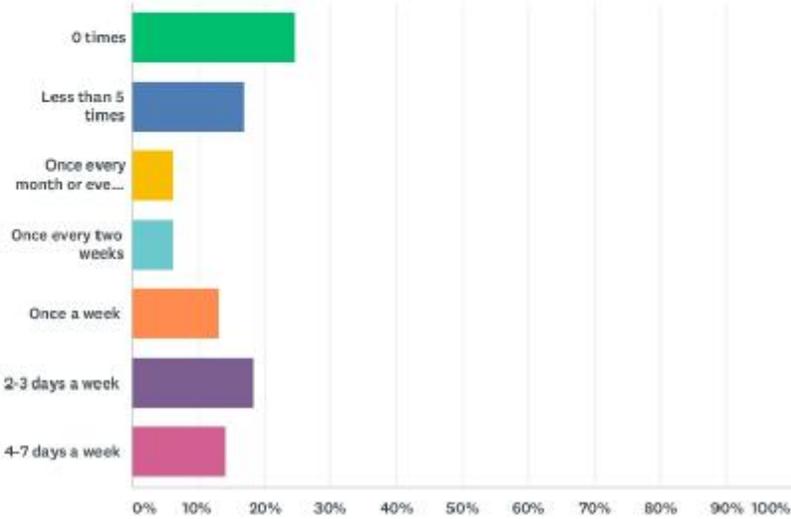


ANSWER CHOICES	RESPONSES	
0 times	8.00%	77
Less than 5 times	20.37%	196
Once every month or every other month	16.74%	161
Once every two weeks	6.55%	63
Once a week	12.79%	123
2-3 days a week	23.39%	225
4-7 days a week	12.16%	117
TOTAL		962

South Suburban Aquatics Master Plan Survey

Q2 For the past year, select which best describes your household's average visits to an outdoor aquatics facility (typically 3-4 months of operation)?

Answered: 962 Skipped: 0

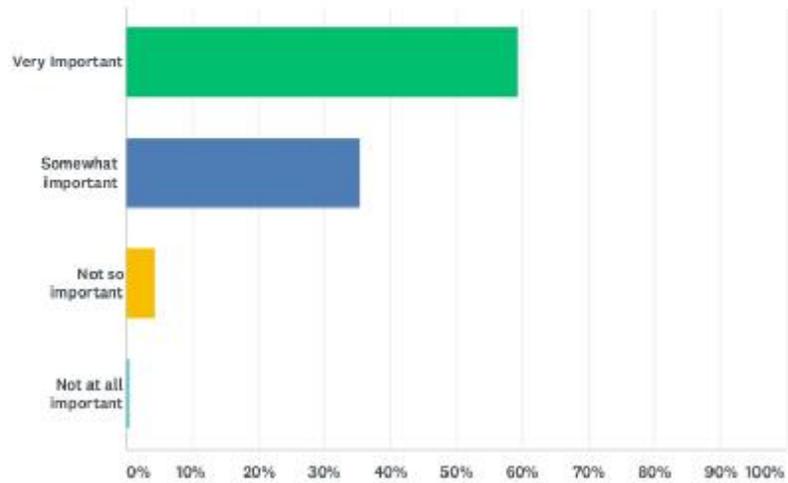


ANSWER CHOICES	RESPONSES	
0 times	24.74%	238
Less than 5 times	16.94%	163
Once every month or every other month	6.24%	60
Once every two weeks	6.24%	60
Once a week	13.20%	127
2-3 days a week	18.40%	177
4-7 days a week	14.24%	137
<b>TOTAL</b>		<b>962</b>

South Suburban Aquatics Master Plan Survey

Q3 When visiting aquatics facilities how important is proximity to your household?

Answered: 962 Skipped: 0

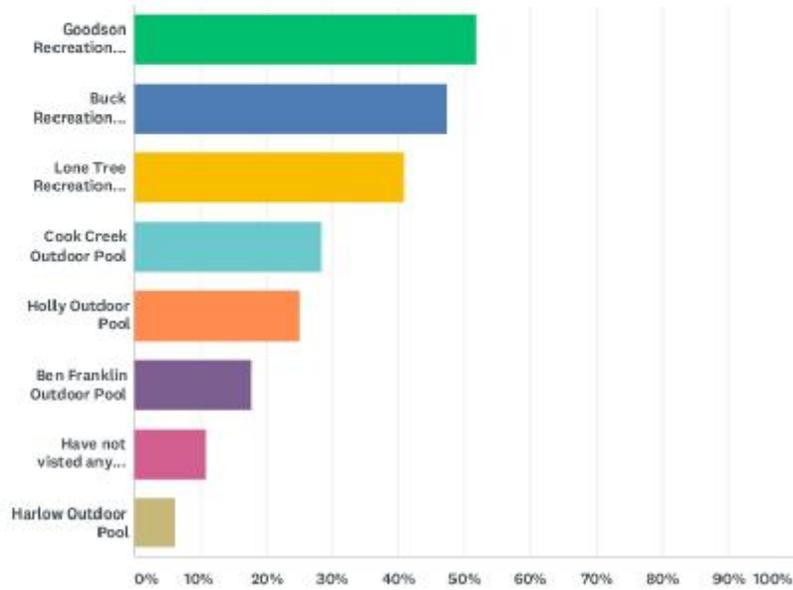


ANSWER CHOICES	RESPONSES	
Very important	59.46%	572
Somewhat important	35.45%	341
Not so important	4.37%	42
Not at all important	0.73%	7
TOTAL		962

South Suburban Aquatics Master Plan Survey

Q4 In the past year, which South Suburban aquatics facilities have you or members of your household visited? Select all that apply.

Answered: 962 Skipped: 0

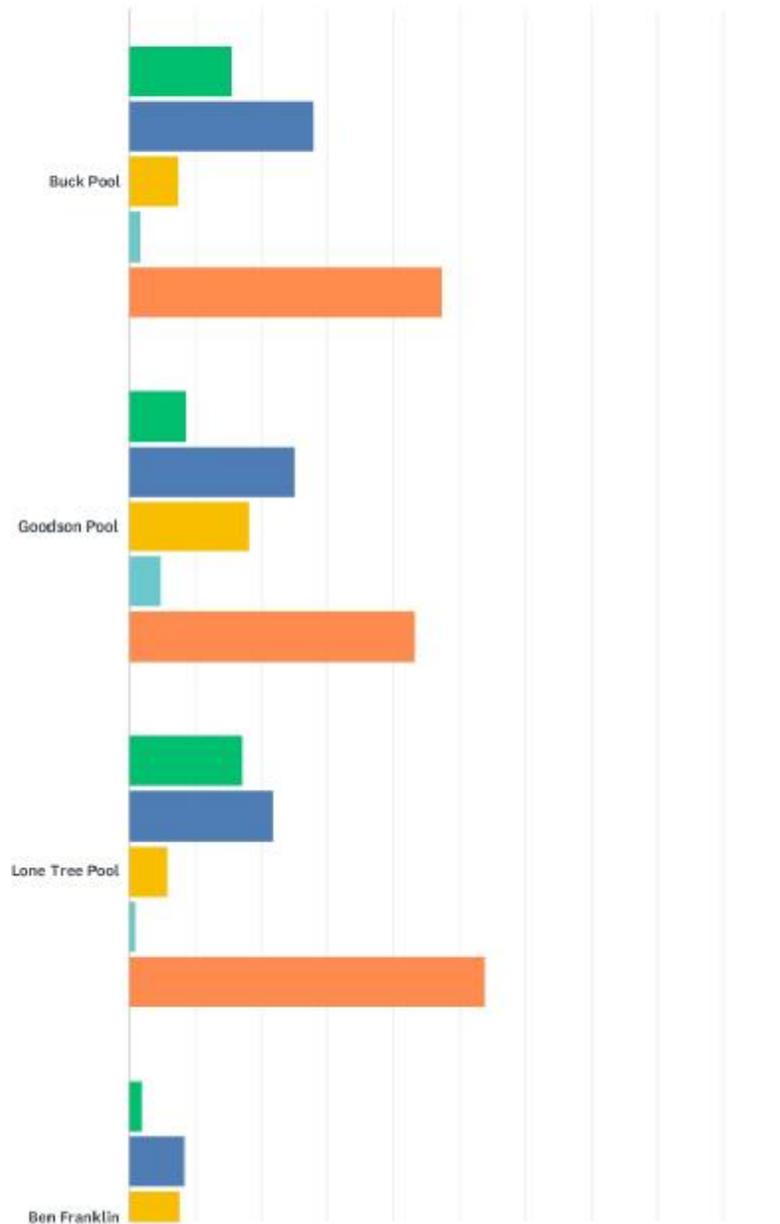


ANSWER CHOICES	RESPONSES	
Goodson Recreation Center Indoor Pool	51.87%	499
Buck Recreation Center Indoor Pool	47.51%	457
Lone Tree Recreation Center Indoor Pool	40.96%	394
Cook Creek Outdoor Pool	28.48%	274
Holly Outdoor Pool	25.16%	242
Ben Franklin Outdoor Pool	17.88%	172
Have not visited any South Suburban aquatics facilities	10.91%	105
Harlow Outdoor Pool	6.24%	60
Total Respondents: 962		

South Suburban Aquatics Master Plan Survey

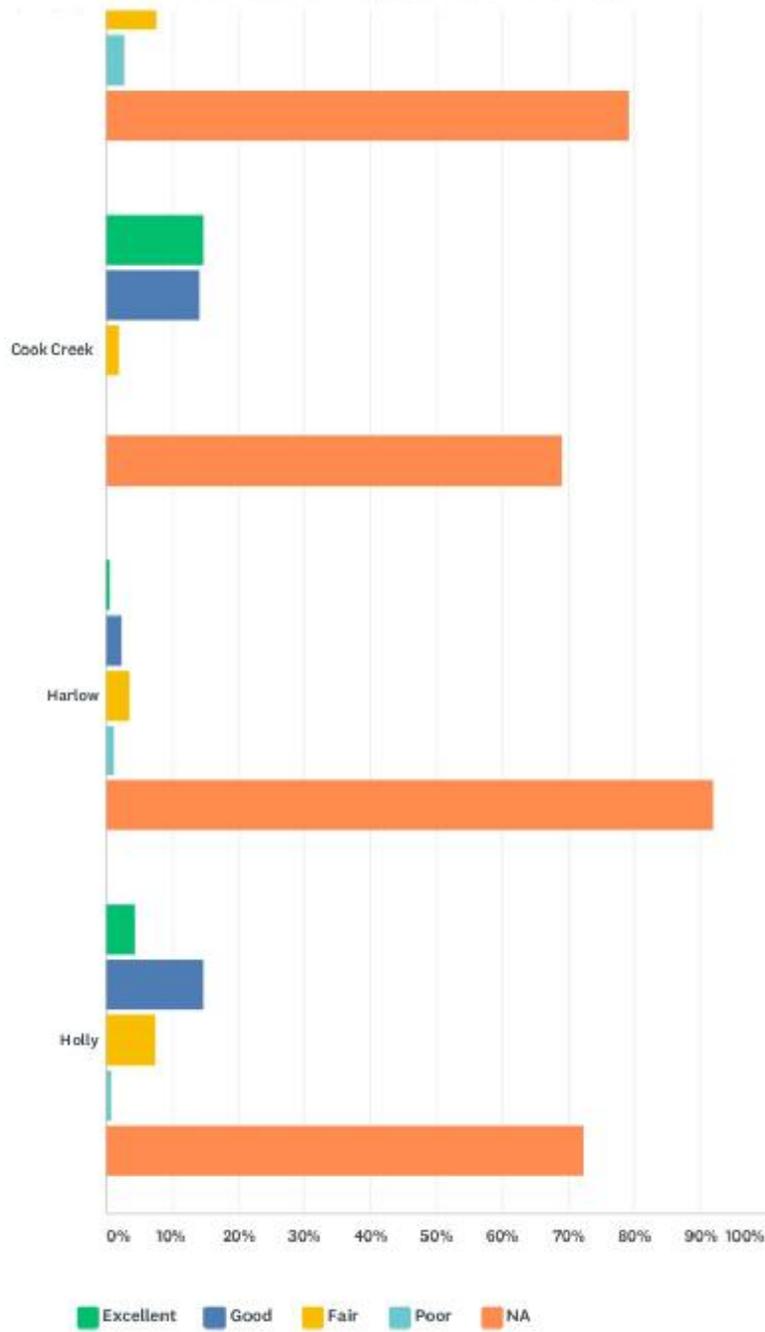
Q5 Of the South Suburban aquatics facilities you have visited please rate the overall condition. Please rate all facilities, if you have not visited a particular facility select NA.

Answered: 962 Skipped: 0



5 / 18

South Suburban Aquatics Master Plan Survey



	EXCELLENT	GOOD	FAIR	POOR	NA	TOTAL
Buck Pool	15.38%	27.96%	7.59%	1.66%	47.40%	962
	148	269	73	16	456	

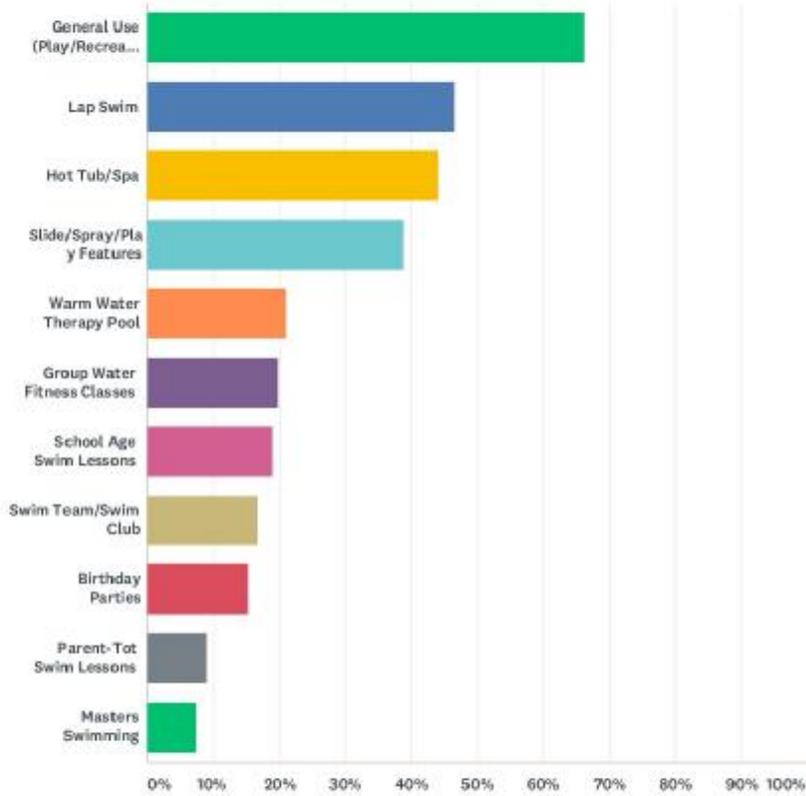
South Suburban Aquatics Master Plan Survey

Goodson Pool	8.52% 82	25.16% 242	18.19% 175	4.89% 47	43.24% 416	962
Lone Tree Pool	17.26% 166	21.83% 210	5.93% 57	1.04% 10	53.95% 519	962
Ben Franklin	1.98% 19	8.42% 81	7.69% 74	2.70% 26	79.21% 762	962
Cook Creek	14.76% 142	14.24% 137	1.87% 18	0.10% 1	69.02% 664	962
Harlow	0.62% 6	2.39% 23	3.64% 35	1.25% 12	92.10% 886	962
Holly	4.47% 43	14.76% 142	7.48% 72	0.94% 9	72.35% 696	962

South Suburban Aquatics Master Plan Survey

Q6 When visiting aquatics facilities which programs/amenities have you or members of your household utilized in the last year? Select all that apply.

Answered: 962 Skipped: 0



ANSWER CHOICES	RESPONSES	
General Use (Play/Recreational Use)	66.22%	637
Lap Swim	46.67%	449
Hot Tub/Spa	44.18%	425
Slide/Spray/Play Features	38.98%	375
Warm Water Therapy Pool	21.10%	203
Group Water Fitness Classes	19.96%	192
School Age Swim Lessons	19.02%	183
Swim Team/Swim Club	16.74%	161

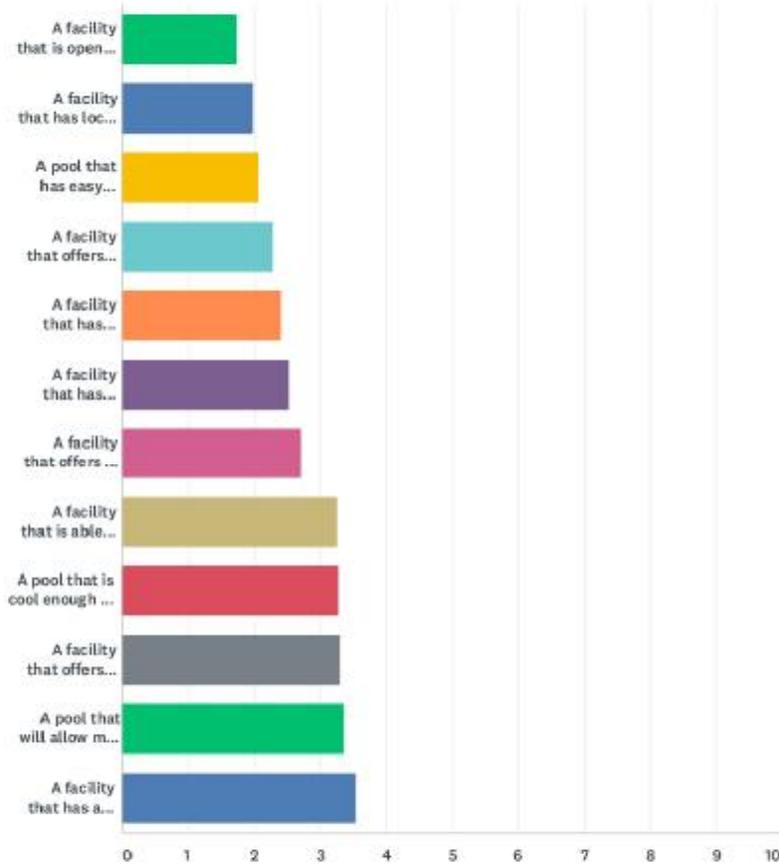
### South Suburban Aquatics Master Plan Survey

Birthday Parties	15.28%	147
Parent-Tot Swim Lessons	8.94%	86
Masters Swimming	7.48%	72
Total Respondents: 962		

South Suburban Aquatics Master Plan Survey

Q7 If improvements were made to existing South Suburban aquatics facilities or a new facility were to come to our community what features/improvements would you most like to see? Please rate from 5 to 1 with 5 being the most important and 1 being the least important.

Answered: 928 Skipped: 34



	5	4	3	2	1	TOTAL	WEIGHTED AVERAGE
A facility that is open year round.	64.44%	14.12%	10.34%	4.85%	6.25%	928	1.74
A facility that has locker rooms with modern amenities and easy access--ADA approved.	44.72%	26.83%	17.78%	5.60%	5.06%	928	1.99
A pool that has easy access, with water that is warm enough so I do not shiver when getting in.	46.44%	24.03%	14.22%	5.28%	10.02%	928	2.08

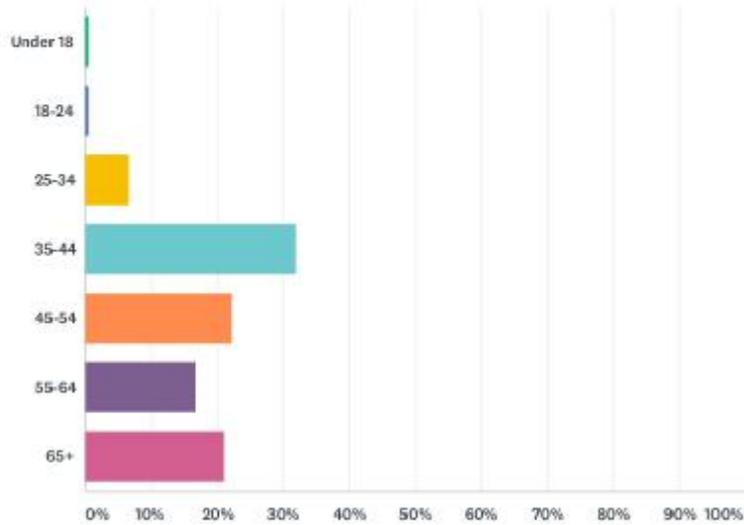
### South Suburban Aquatics Master Plan Survey

A facility that offers community aquatics programs for all ages.	38.15% 354	24.25% 225	19.07% 177	8.19% 76	10.34% 96	928	2.28
A facility that has recreational aspects like water slides, lazy rivers, spray features and diving boards.	40.95% 380	19.40% 180	14.87% 138	8.19% 76	16.59% 154	928	2.40
A facility that has multiple pools with different temperatures, varying depths, ramps and stairs for easy access.	31.57% 293	23.38% 217	18.97% 176	11.42% 106	14.66% 136	928	2.54
A facility that offers a certified swim lesson program.	30.82% 286	19.18% 178	18.43% 171	8.94% 83	22.63% 210	928	2.73
A facility that is able to accommodate competition swim teams.	23.06% 107	14.66% 68	13.15% 61	11.85% 55	37.28% 173	464	3.26
A pool that is cool enough for me to do aggressive aerobic exercise or lap swimming.	18.21% 169	13.58% 126	20.80% 193	17.24% 160	30.17% 280	928	3.28
A facility that offers some sort of warm water aquatic rehab.	18.21% 169	13.79% 128	19.61% 182	16.06% 149	32.33% 300	928	3.30
A pool that will allow me to stand at a comfortable depth so I feel safe being in the water without being a good swimmer.	14.22% 132	15.52% 144	21.77% 202	16.59% 154	31.90% 296	928	3.36
A facility that has a concession area.	10.24% 95	15.19% 141	21.44% 199	17.35% 161	35.78% 332	928	3.53

South Suburban Aquatics Master Plan Survey

Q8 Which of the following best describes your age?

Answered: 925 Skipped: 37

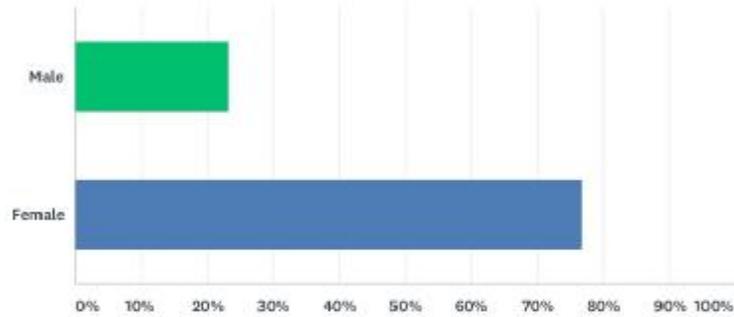


ANSWER CHOICES	RESPONSES	
Under 18	0.65%	6
18-24	0.54%	5
25-34	6.70%	62
35-44	32.11%	297
45-54	22.16%	205
55-64	16.65%	154
65+	21.19%	196
TOTAL		925

South Suburban Aquatics Master Plan Survey

Q9 What is your gender?

Answered: 918 Skipped: 44

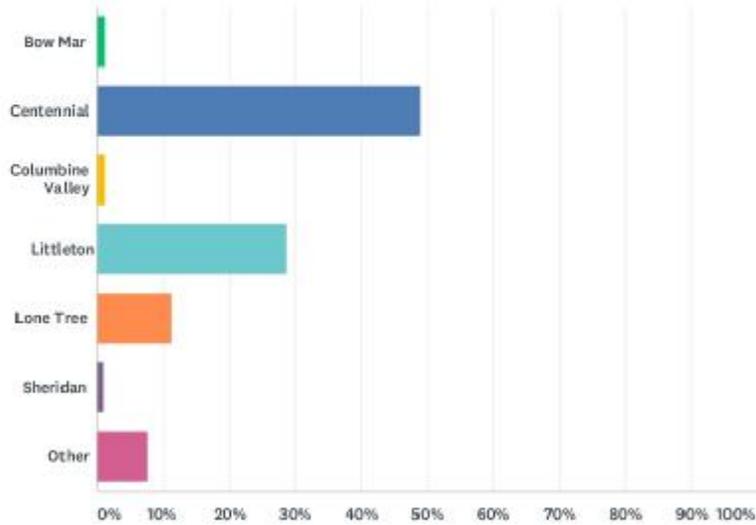


ANSWER CHOICES	RESPONSES	
Male	23.20%	213
Female	76.80%	705
TOTAL		918

South Suburban Aquatics Master Plan Survey

Q10 Select which community you live in?

Answered: 928 Skipped: 34

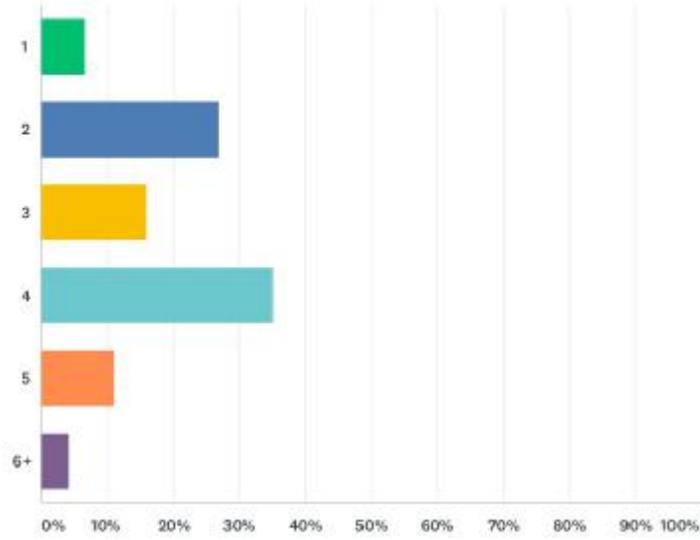


ANSWER CHOICES	RESPONSES	
Bow Mar	1.29%	12
Centennial	48.92%	454
Columbine Valley	1.19%	11
Littleton	28.66%	266
Lone Tree	11.31%	105
Sheridan	0.97%	9
Other	7.65%	71
TOTAL		928

South Suburban Aquatics Master Plan Survey

Q11 How many people live in your household?

Answered: 923 Skipped: 39

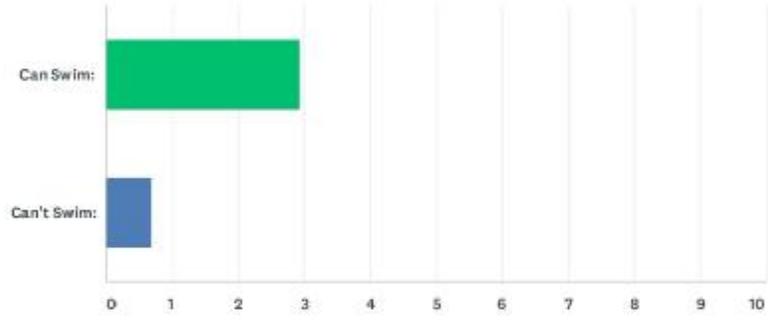


ANSWER CHOICES	RESPONSES	
1	6.61%	61
2	27.09%	250
3	15.93%	147
4	35.10%	324
5	11.16%	103
6+	4.12%	38
TOTAL		923

South Suburban Aquatics Master Plan Survey

Q12 How many people in your household

Answered: 923 Skipped: 39

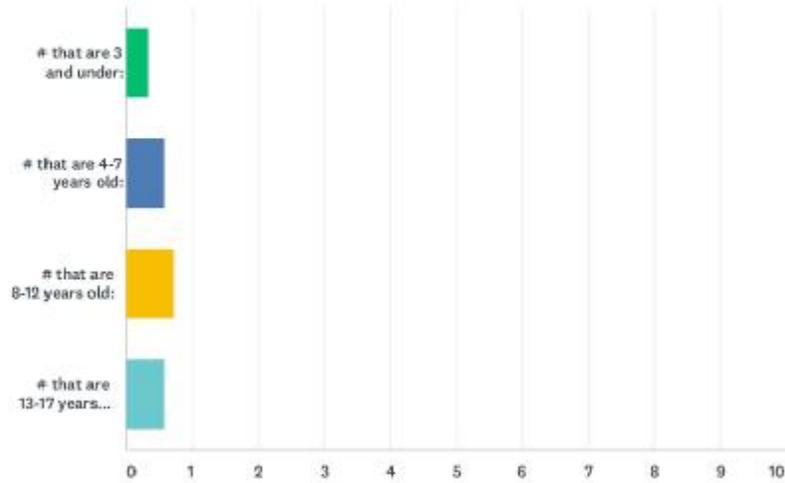


ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Can Swim:		3	2,678 917
Can't Swim:		1	401 576
Total Respondents: 923			

South Suburban Aquatics Master Plan Survey

Q13 How many children are living at your household?

Answered: 715 Skipped: 247

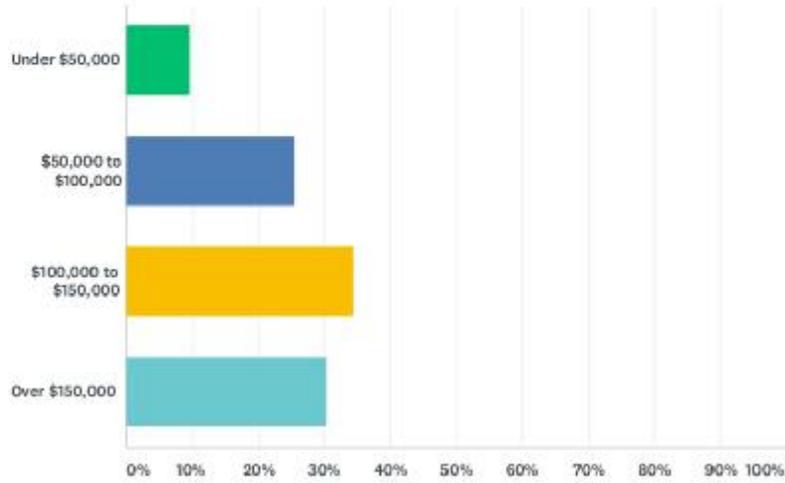


ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
# that are 3 and under:	0	164	486
# that are 4-7 years old:	1	316	531
# that are 8-12 years old:	1	383	526
# that are 13-17 years old:	1	284	484
Total Respondents: 715			

South Suburban Aquatics Master Plan Survey

Q14 Which of the following best describes your household annual income?

Answered: 863 Skipped: 99



ANSWER CHOICES	RESPONSES	
Under \$50,000	9.62%	83
\$50,000 to \$100,000	25.49%	220
\$100,000 to \$150,000	34.53%	298
Over \$150,000	30.36%	262
TOTAL		863