

PARK & POOL STUDY



PREPARED FOR
CITY OF FAIRBURY

FAIRBURY, NEBRASKA



COORDINATING PROFESSIONAL

MAY 5TH 2016

OA PROJECT No. 015-2112

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PURPOSE AND SCOPE

The City of Fairbury requested an evaluation of the existing Community Parks System and Municipal Swimming Pool. This report, prepared by Olsson Associates and BVH Architects, will provide future direction to the City for Master Planning of the Community Park System and in evaluating the existing Fairbury Municipal Swimming Pool. The report is divided into two parts:

- Part I : Park Inventory and Assessment
- Part II : Fairbury Municipal Swimming Pool Assessment and Evaluation

The report will consist of:

- An assessment of the existing facilities related to physical condition, current codes, and design trends.
- A cost analysis and conceptual design to remodel existing recreational and swimming pool facilities.
- Conceptual designs for replacing the Fairbury Municipal Swimming Pool (Part II only)
- A cost analysis for replacing the Fairbury Municipal Swimming Pool (Part II only)

Part I: Recreation Facilities Evaluation

Historical Background

Historically, there are three main influences that can be utilized by the City of Fairbury in developing its recreation opportunities in the region:

- Little Blue River
- Pony Express/Oregon Trail
- Railroad Industry

Located on the banks of the **Little Blue River**, close to where the Oregon Trail begins to parallel the river on its way to the Platte River and other major routes westward, Fairbury has a rich history of pioneering spirit that presents unique opportunities to combine recreation with history. These recreation opportunities occur in an area that offers many natural areas along the river valley that enhance opportunities to combine the natural beauty of the Little Blue River valley with recreation.

Following drainage ways northwest from St. Louis, **Pony Express** riders followed the river to where the Pony Express Route intersected the southern branch of the Oregon Trail at Rock Creek Station, which was an important road ranch on the trek westward. With Fairbury's proximity to the historic **Oregon Trail** and the **Little Blue River**, there is a natural connection between City and recreation activities that involve natural history and the pioneer/explorer history of the region. The presence of the railroad has impacted Fairbury since 1872 and will continue to do so into the foreseeable future.

As the state continued to develop, the same routes followed by pony express riders and pioneers, became the route for a series of railroad companies. With the prospect of the railroads, entrepreneurs like James B. Mattingly, a frontiersman and freighter, and Woodford G. McDowell, came together to donate land to establish the town of Fairbury. With Fairbury becoming the Jefferson County seat in 1871, Fairbury became a natural rest area for settlers traveling west on this major route to the Pacific Ocean.

As the county seat along the trail westward, Fairbury has hosted regional recreation attractions such as **Campbell Brothers Circus**, once the second largest circus in the world, which started using Fairbury as their winter headquarters in 1885. Fairbury has hosted the **County Fair** since 1874. The **Shriner's Flea Market** at City Park is a major Fourth of July attraction that has been held since 1970.

Future Potential

Reviewing the Comparison of Recreation Facilities to National Standards (Figure 1), Fairbury has over 220 acres of park ground. With Fairbury's population maintaining a constant level over the last few decades (Figures 2 and 3), the recreational need of the City is not for more parks. There are always opportunities to add variety to the available recreation opportunities.

Fairbury is unique in its park structure. Typically, park experts like to see a variety of sizes of parks distributed throughout a city area. With three large park areas, Fairbury provides several recreational opportunity in close proximity. Consolidating facilities into three main areas helps reduce maintenance costs. Other recommended improvements that could be added to the Fairbury parks system would be a skate park, dog run, and basketball courts.

Fairbury parks exhibit historic ties to recreation and a love for natural beauty. With the start of a trail system along the south edge of the City, further developing a trail system associated with the river and the existing parks and natural areas around Fairbury would help citizen's access recreational opportunities. Tying the trail system to pedestrian corridors within the City, utilizing Safe Routes to School funding, would create endless opportunities for recreationalists to access and enjoy all that Fairbury parks have to offer.



LEGEND

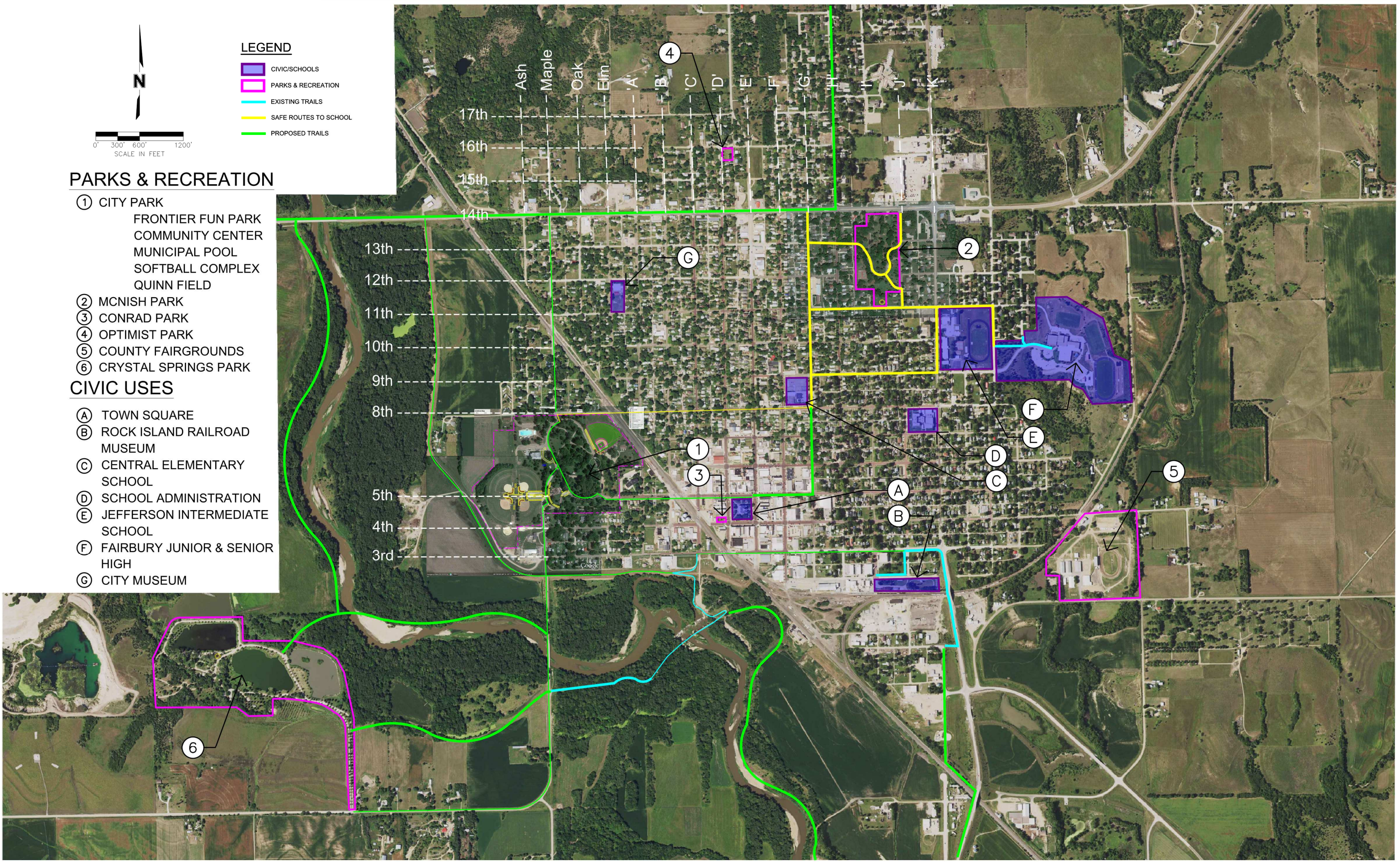
- CIVIC/SCHOOLS
- PARKS & RECREATION
- EXISTING TRAILS
- SAFE ROUTES TO SCHOOL
- PROPOSED TRAILS

PARKS & RECREATION

- ① CITY PARK
FRONTIER FUN PARK
COMMUNITY CENTER
MUNICIPAL POOL
SOFTBALL COMPLEX
QUINN FIELD
- ② MCNISH PARK
- ③ CONRAD PARK
- ④ OPTIMIST PARK
- ⑤ COUNTY FAIRGROUNDS
- ⑥ CRYSTAL SPRINGS PARK

CIVIC USES

- (A) TOWN SQUARE
- (B) ROCK ISLAND RAILROAD MUSEUM
- (C) CENTRAL ELEMENTARY SCHOOL
- (D) SCHOOL ADMINISTRATION
- (E) JEFFERSON INTERMEDIATE SCHOOL
- (F) FAIRBURY JUNIOR & SENIOR HIGH
- (G) CITY MUSEUM



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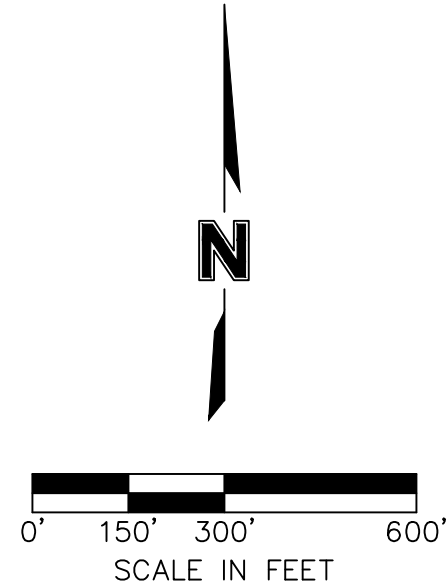


OVERALL RECREATION PLAN



201 East 2nd Street
P.O. Box 1072
Grand Island, NE 68802-1072
TEL 308.384.8750
FAX 308.384.8752

FIGURE

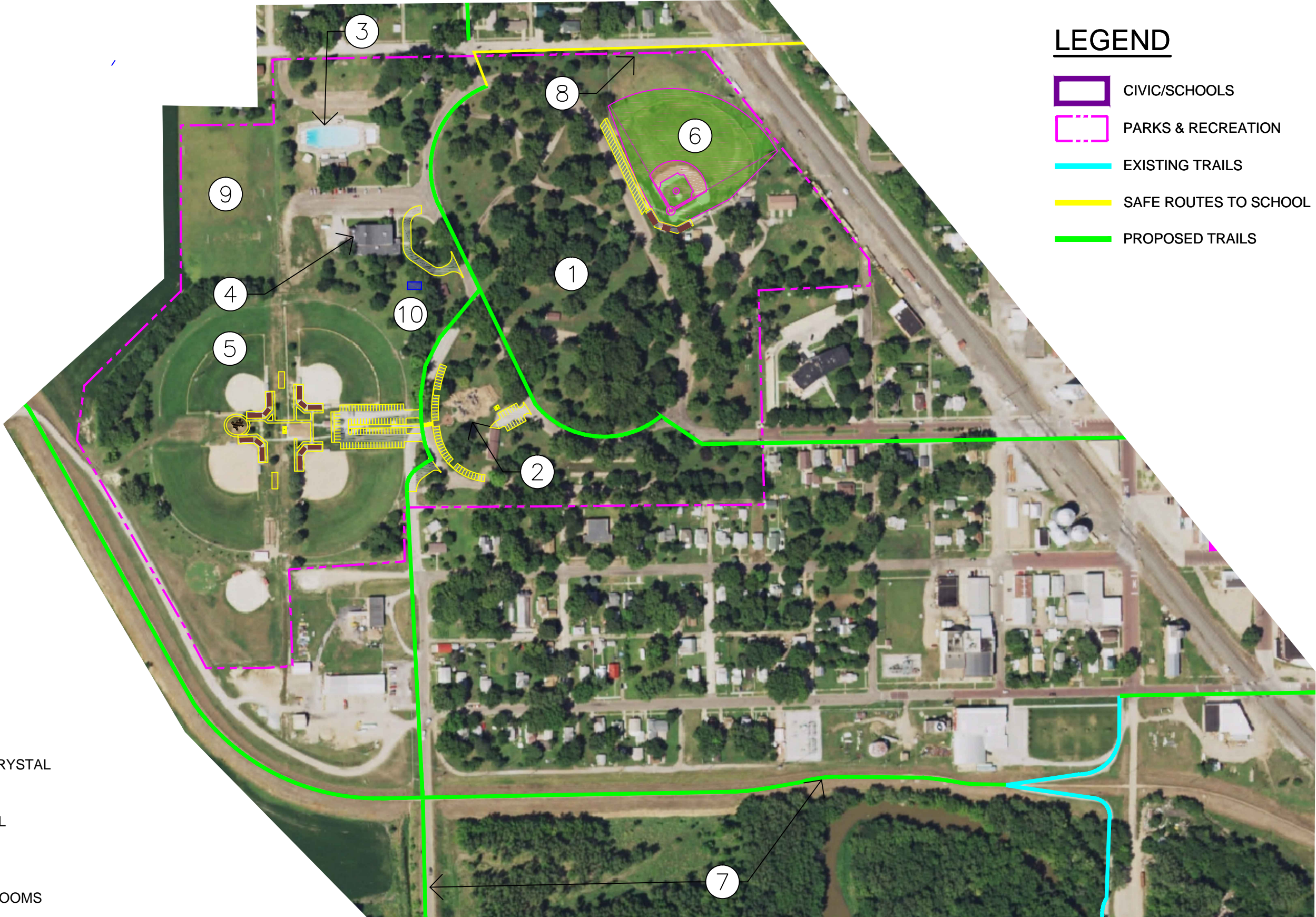


LEGEND

- 1 CITY PARK MIDDLE LOOP
- 2 FRONTIER FUN PARK
- 3 MUNICIPAL POOL
- 4 COMMUNITY CENTER
- 5 SOFTBALL COMPLEX
- 6 QUINN FIELD
- 7 TRAIL CONNECTION TO CRYSTAL SPRINGS PARK
- 8 SAFE ROUTES TO SCHOOL
- 9 SOCCER FIELDS
- 10 STORM SHELTER / RESTROOMS

LEGEND

- CIVIC/SCHOOLS
- PARKS & RECREATION
- EXISTING TRAILS
- SAFE ROUTES TO SCHOOL
- PROPOSED TRAILS



City Park – 75.2 acres

- ❖ Middle Loop Picnic Area
- ❖ Frontier Fun Park
- ❖ Community Center
 - Senior Citizen Center
 - Community Gymnasium
- ❖ Softball Complex
- ❖ Municipal Pool
- ❖ Soccer Fields



City Park includes enough acreage to meet the recommended National Standard for parkland. This park offers the widest variety of recreational opportunities. In addition to improvements to the Municipal Pool facilities (covered in detail within this report), there are some suggestions for improvement that could be made:

❖ Middle Loop Picnic Area



Middle Loop Fountain

This central area of City Park is home to the largest Flea Market every Fourth of July. The area, shaded by a canopy of mature trees, includes:

- electrical hookups for Flea Market vendors
- individual picnic sites,
- picnic shelters
- 15 horseshoe pits and
- a large, unique, cast iron fountain

The main entrance to the Park is a landscaped brick boulevard entrance from the east on 5th Street and another entrance on the north side of the loop at Maple and 8th Streets.

Opportunities for Improvement:

1. Drainage system with curb and gutter to alleviate drainage problems around the inside of the drive loop.

2. Provide off-street parking at strategic locations around the loop. Some of these parking spaces should be ADA accessible with walks to appropriate uses.
 - At picnic shelters
 - At Frontier Fun Park
3. Provide a Storm Shelter/Restroom in a centralized location that could provide shelter to several uses within the park.
4. As an alternative, secured portable restrooms could be provided next to the playground so users would not need to cross to the community center to use restrooms.
5. Engage the local garden club and the Arbor Day Foundation to supplement the existing tree labels with additional labels to develop the park as an 'arboretum.'
6. Begin to consider new tree plantings to replace the aging tree canopy. Enlist the help of an arborist to prune existing tree canopies to improve overall health of existing trees and open canopy to allow addition of new trees.
7. Supply adequate electrical service and provide utility outlets to serve vendors of the Flea Market
8. Supply additional hydrants at picnic shelters and at appropriate locations within the Loop Area.

Opinion of Probable Cost – Middle Loop

Middle Loop Picnic Area

Item	Units	Qty	Costs		Total
Storm Sewer	LS	1	\$ 625,400.00	\$	625,400.00 *
Storm Shelter/Restrooms	LS	1	\$ 372,240.00	\$	372,240.00
Restrooms (alternate)					
Concrete Pad (12x14)	SF	168	\$ 8.00	\$	1,344.00
4 Portable	LS	4	\$ 750.00	\$	3,000.00
2 ADA Portable	LS	2	\$ 1,000.00	\$	2,000.00
Arboretum Development	LS	1	Donated		
New Tree Plantings	EA	20	\$ 300.00	\$	6,000.00
Vendor Outlets (per outlet)	LS	6	\$ 1,500.00	\$	9,000.00
			Middle Loop Subtotal	\$	1,018,984.00

❖ Frontier Fun Park



Entrance to the Fun Park

The Frontier Fun Park is wooden play structure built by community volunteers that provides multiple opportunities for play, ranging from a variety of climbing, swinging, and balancing stations to a make believe Pioneer Village. The entire play area is secured by a perimeter fence and an entrance to the site acknowledging donors to the project.



A variety of play opportunities

Opportunities for Improvement:

1. Pedestrian crossing to the Softball/Pool/Community Center could be established with pavement markings, a speed table, and signage to slow traffic for families cross between different areas of the park
2. Restrooms could be provided next to playground so users would not need to cross to the community center to use restrooms. These restrooms could be secured portable restrooms.
3. Security Lighting for use during evening hours and to lessen opportunities for vagrancy and vandalism.
4. More benches could be installed for parents



Post repair is needed

This area should be reserved for a play structure. The City should plan and budget for the replacement of the existing Frontier Fun Park with a new play facility.

Opinion of Probable Cost - Frontier Fun Park

Frontier Fun Park

Pedestrian Crossing	LS	1	\$	5,000.00	\$	5,000.00
Parking (52 spaces) 7,300 sf compact gravel	CY	270	\$	25.00	\$	6,750.00
Curb Stops (28)	EA	28	\$	100.00	\$	2,800.00
Restrooms						
Concrete Pad (12x14)	SF	168	\$	8.00	\$	1,344.00
2 Portable	LS	2	\$	750.00	\$	1,500.00
1 ADA Portable	LS	1	\$	1,000.00	\$	1,000.00
Benches - 6'	EA	4	\$	1,000.00	\$	4,000.00
Miscellaneous Repairs to Structure	LS	1	\$	5,000.00	\$	5,000.00
Post Repair	EA	1	\$	100.00	\$	100.00
Frontier Fun Park Subtotal						\$ 27,494.00

❖ Community Center

The Community Center serves all ages providing athletic opportunities for the youths of Fairbury, and a Senior Center that serves the senior citizens and families of Fairbury. The Center can be rented for special family gatherings. The south wall of the gymnasium is a folding partition that opens to provide spectators in the dining area an opportunity to enjoy the youth basketball, indoor volleyball, and other gymnasium activities.

Opportunities for Improvement:

1. ADA accessibility could be upgraded and there were some changes in the building including ADA accessible restrooms.
2. Installation of new windows to conserve on utility costs
3. Insulation for the building
4. Addition of patio door to open up the south side of the building to an outdoor seating area
5. Drop off lane to facilitate bus operations in inclement weather.

Opinion of Probable Cost - Community Center

Community Center

Item	Units	Qty	Costs	Total
Drop-off Lane - 6"	SF	8200	\$ 6.00	\$ 49,200.00
Outdoor Seating Area & Patio Door	LS	1	\$ 50,000.00	\$ 50,000.00
Community Center Subtotal				\$ 99,200.00

❖ Softball Complex

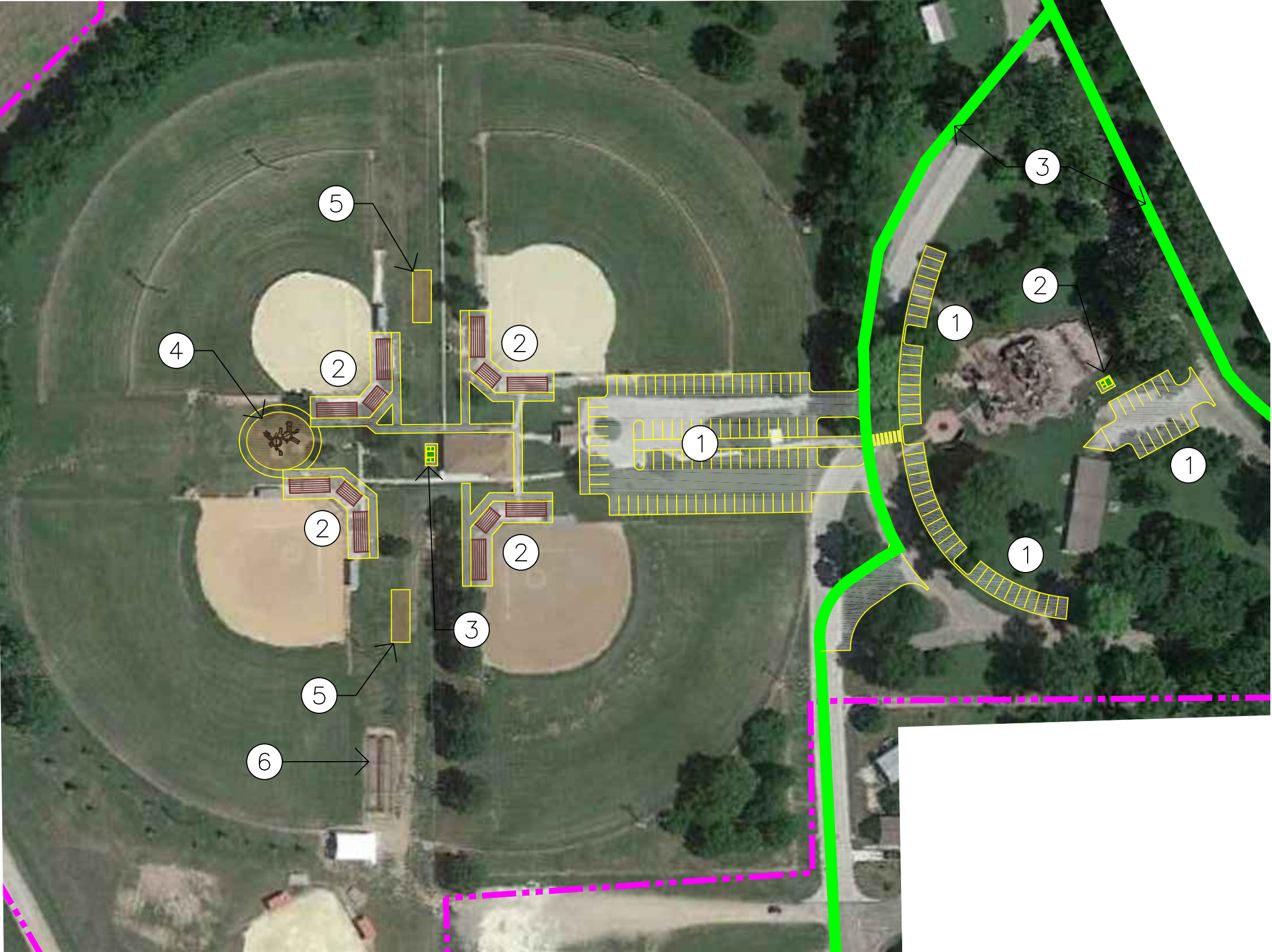
The Softball Complex is host to two to four tournaments during the summer, drawing participants from several surrounding communities. The Memorial Day tournament involves 24 to 30 teams. The complex is a typical 4 diamond cloverleaf configuration with an additional practice diamond. There is a centrally located concession building with restrooms, backstops, dugouts for each team and bleachers. There is also a double batting cage.

Opportunities for Improvements

1. Better parking could be developed at the entrance including concrete parking spaces for ADA accessibility.
2. More sidewalks to bleacher areas would provide ADA accessibility for spectators, including concrete pads to provide accessible seating areas at each diamond.
3. New bleachers to replace the weathered wood bleachers
4. The batting cages need to be refurbished/upgraded
5. Add a bullpen(s) for warmup and practice between the diamonds
6. Refurbish/upgrade dug-outs
7. Addition of a storm shelter.
8. Additional restroom facilities
9. Repair the drainage issues associated with diamonds
10. Playground for younger siblings centrally located to serve all diamonds

Opinion of Probable Cost - Softball Complex

Softball Complex						
Parking (88 spaces) 28,000 sf compact gravel	CY	1040	\$	25.00	\$	26,000.00
Curb Stops (88)	EA	88	\$	100.00	\$	8,800.00
Sidewalks 300 lf x 8'w	SF	2400	\$	6.00	\$	14,400.00
Restrooms						
Concrete Pad (12x14)	SF	168	\$	8.00	\$	1,344.00
4 Portable	LS	4	\$	750.00	\$	3,000.00
1 ADA Portable	LS	1	\$	1,000.00	\$	1,000.00
New Bleachers						
Grading	LS	1	\$	2,500.00	\$	2,500.00
Concrete Pad (140x20)	SF	2800	\$	8.00	\$	22,400.00
Bleachers (170 seatings)	LS	4	\$	26,000.00	\$	104,000.00
Refurbished Batting Cages	LS	1	\$	5,000.00	\$	5,000.00
Bullpens	LS	2	\$	8,000.00	\$	16,000.00
Playground	LS	1	\$	50,000.00	\$	50,000.00
Softball Complex Subtotal					\$	254,444.00



LEGEND

- CIVIC/SCHOOLS
- PARKS & RECREATION
- EXISTING TRAILS
- SAFE ROUTES TO SCHOOL
- PROPOSED TRAILS

SOFTBALL COMPLEX

- 1 PARKING IMPROVEMENT & EXPANSION
- 2 NEW BLEACHERS
CONCRETE PAD
SIDEWALK CONNECTION
- 3 RESTROOMS
CONVERT EXISTING RESTROOM TO
STORM SHELTER
- 4 PLAYGROUND
- 5 BULLPENS
- 6 REFURBISHED BATTING CAGE

FRONTIER FUN PARK

- 1 PARKING IMPROVEMENT & EXPANSION
- 2 RESTROOMS / STORM SHELTER
- 3 PROPOSED TRAIL



❖ Municipal Swimming Facility

Besides being the community pool, the Municipal Pool is home to 2 to 3 club swim meets annually. Seventeen teams participate with swimmers from 5 year olds to 18 year olds. The needs of the facility are addressed in a separate section of this report.

❖ Soccer Fields

To the west of the Municipal Swimming Facility and the Community Center there are 3 youth soccer fields with goals and one junior high soccer field with goals.

Opportunities for Improvements

1. Provide bleachers for parent/spectators. As bleachers are replaced at the softball fields, some re-furbishing of those bleachers could make them useable for the soccer fields.
2. Shade structures for spectators
3. Restrooms could be provided next to playground so users would not need to cross to the community center to use restrooms. These restrooms could be secured portable restrooms.
4. The fields could be over-seeded with an athletic field, turf-type fescue after minor re-grading to improve the running surface and maintenance and to help combat a mole problem that exists, a granular herbicide should be applied before and after the soccer season to control grubs and other insects in the sod that moles are seeking for food.

Opinion of Probable Cost – Soccer Fields

Soccer Fields						
Item	Units	Qty	Costs		Total	
Soccer Fields - topdress & re-seed	SF	115000	\$	0.30	\$	34,500.00
Soccer Fields Subtotal						\$ 34,500.00

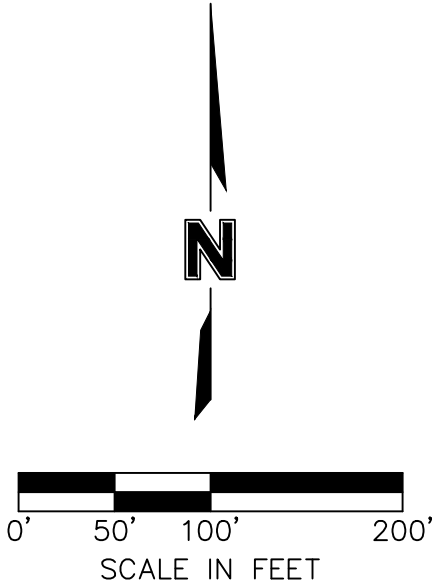
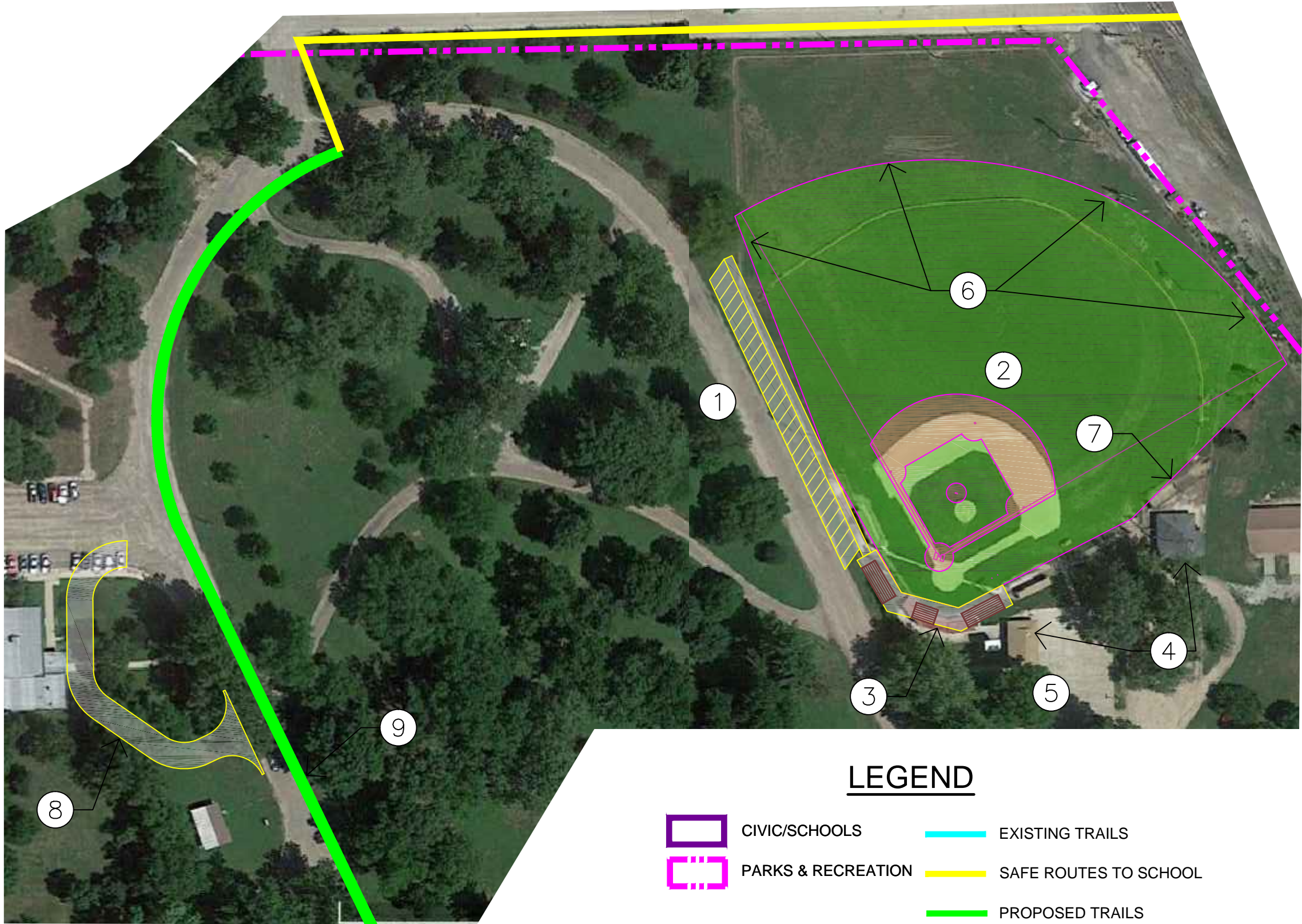
❖ Quinn Field

Quinn Field is the only regulation baseball diamond for the City. The overall facility could use upgrading. More specifically:

1. The field could be re-oriented and moved outward to provide additional space behind home plate.
2. Add underground drainage to the new field
3. Add irrigation to the new field
4. Maintain existing lighting as possible and supplement with additional field lighting, if needed.
5. The existing maintenance building and dugouts need new roofs. With re-orienting new dugouts would be built.

Opinion of Probable Cost - Quinn Field

Quinn Field					
Item	Units	Qty	Costs		Total
New Baseball Field	LS			\$	728,525.88
Grading & Drainage			\$	196,650.00	
Concrete work			\$	57,200.00	
Fencing & Enclosures			\$	70,987.00	
Equipment & Furnishings			\$	108,500.00	
Field Surfacing			\$	96,500.00	
Contingency (10%)			\$	52,983.70	
Engineering services (25%)			\$	145,705.18	
Parking (28 spaces) 5800 sf compact gravel	CY	215	\$	25.00	\$ 5,375.00
Curb Stops (28)	EA	28	\$	100.00	\$ 2,800.00
Sidewalks 300 lf x 8'w	SF	2400	\$	6.00	\$ 14,400.00
Roofs for Assessory Buildings	SQ	50	\$	150.00	\$ 7,500.00
Field Lighting (new and updated)	LS	1	\$	120,000.00	\$ 120,000.00
Quinn Field Grand Total				\$	878,600.88



- QUINN FIELD
- 1

PARKING IMPROVEMENT & EXPANSION
- 2

NEW BALLFIELD
40' BEHIND HOMEPLATE
DRAINAGE SYSTEM
IRRIGATION SYSTEM
- 3

NEW BLEACHERS
CONCRETE PAD
SIDEWALK CONNECTION
- 4

NEW ROOFS ON CONCESSION &
MAINTENCE
- 5

RENOVATE BASKETBALL COURTS
BULLPENS
- 6

REFURBISH LIGHTING AND EXPAND
- 7

REFURBISHED BATTING CAGE
- COMMUNITY CENTER
- 8

DROP-OFF LANE & ADA ACCESS
- 9

PROPOSED TRAIL



McNish Park – 17.9 acres



Located at the NE area of Fairbury, McNish Park was started with land purchased by the City in 1920 and enlarged later by land donated by Mrs. Sylvia McNish. The park was originally named Highland Park and renamed in 1941 as McNish Park in honor of the land and moneys donated by Mrs. McNish.

1. A sidewalk/path system could be added to provide better access to different areas of the park, including the shelter commemorating Mrs. McNish and the pond/waterfall feature. The path system could provide additional opportunity for walks and help direct Frisbee golf players.
2. Replace the floor of the shelter.
3. Provide a filtration system for the pond/waterfall feature.



4. Upgrade the Frisbee Golf Course with new signage to facilitate play by individuals new to the course.



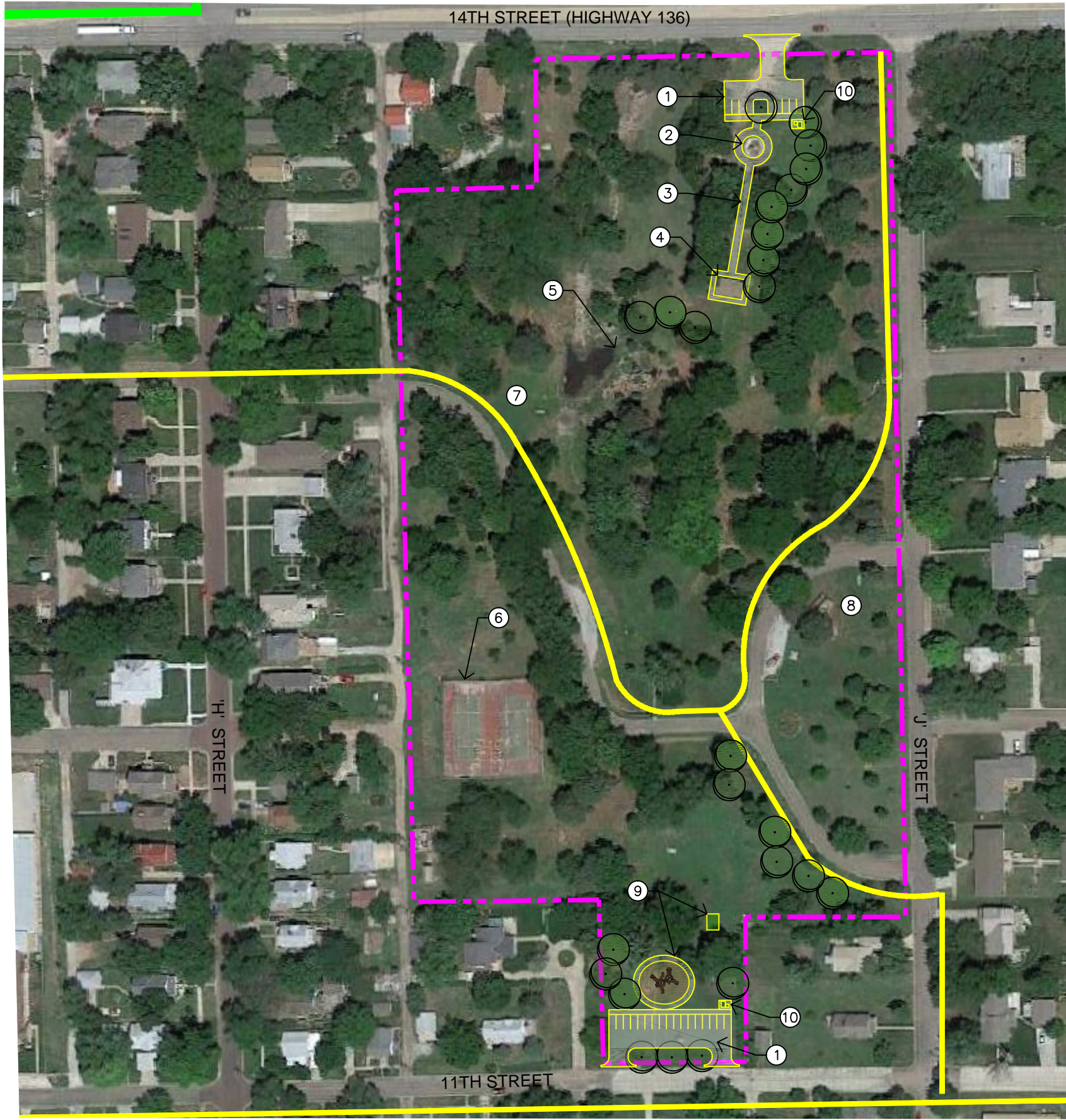
5. Provide additional off-street parking along 14th Street and on-street parking at the playground area along 11th Street.
6. Upgrade the playground area along 11th Street with new equipment and safety surfacing



7. Begin to consider new tree plantings to replace the aging tree canopy. Enlist the help of an arborist to prune existing tree canopies to improve overall health of existing trees and open canopy to allow addition of new trees.
8. Remove tennis court concrete and consider replacing with a new recreational opportunity.
9. Addition of picnic shelter and play equipment.

Opinion of Probable Cost - McNish Park

McNish Park						
Item	Units	Qty	Costs		Total	
Playground	LS	1	\$	50,000.00	\$	50,000.00
Parking (26 spaces) 14,430 sf compact gravel	CY	1600	\$	25.00	\$	40,000.00
Curb Stops	EA	26	\$	100.00	\$	2,600.00
Sidewalks 300 lf x 8'w	SF	4300	\$	6.00	\$	25,800.00
Restrooms						
Concrete Pad (12x20)	SF	240		8.00	\$	1,920.00
2 Portable	LS	2		750.00	\$	1,500.00
1 ADA Portable	LS	1		1,000.00	\$	1,000.00
Remove Tennis Court Concrete	SY	1600		8.00	\$	12,800.00
Picnic Shelter / Play Equipment	EA	1		50,000.00	\$	50,000.00
Trees	EA	24		300.00	\$	7,200.00
Trails (1960 lf x 8'w)	SF	15680		6.00	\$	94,080.00
McNish Park Grand Total					\$	286,900.00

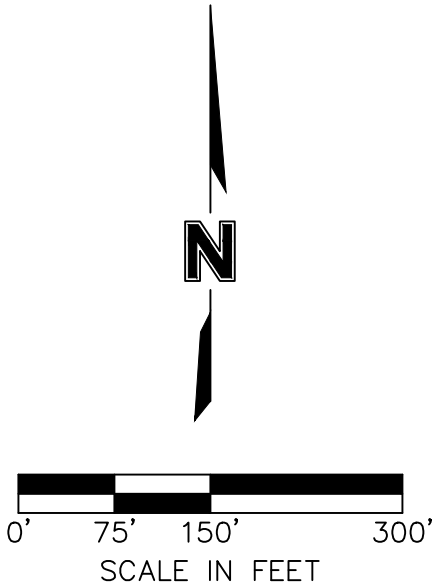


MCNISH PARK

- ① PARKING IMPROVEMENT
- ② HISTORIC FOUNTAIN
- ③ SIDEWALKS TO MCNISH SHELTER
- ④ MCNISH SHELTER
- ⑤ WATER FEATURE
- ⑥ REMOVE FAILING TENNIS COURT CONCRETE
- ⑦ MEMORIAL
- ⑧ BOY SCOUT CABIN
- ⑨ NEW PLAYGROUND/PICNIC SHELTER
- ⑩ RESTROOMS

LEGEND

-  CIVIC/SCHOOLS
-  PARKS & RECREATION
-  EXISTING TRAILS
-  SAFE ROUTES TO SCHOOL
-  PROPOSED TRAILS



Optimist Park - .54 acres



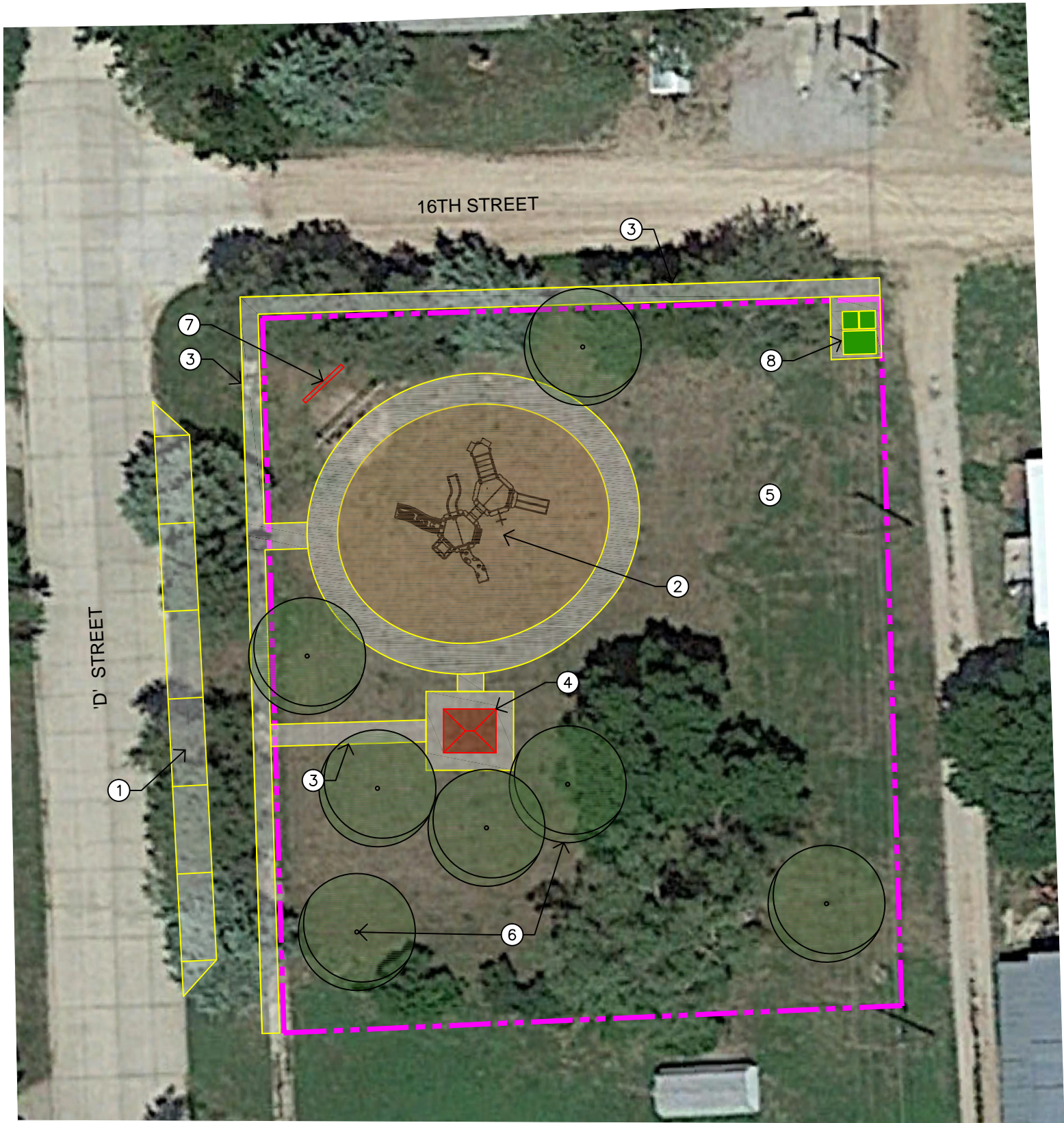
Optimist Park is an under-developed neighborhood park that could provide playground opportunities for Fairbury citizens north of Highway 136 (14th Street). The only improvement in this park is an outdated swing set. The mature trees along 'D' and 16th Streets provide a good beginning to what could be an easily accessible neighborhood park.

Opportunities for Improvement:

1. On-street parking along 'D' Street
2. Upgrade the playground area with new equipment and safety surfacing.
3. Add a picnic shelter
4. Appropriate landscaping to supplement existing trees.
5. Signage mentioning the involvement of the Optimist Club.

Opinion of Probable Cost - Optimist Park

Optimist Park						
Item	Units	Qty	Costs		Total	
Playground	LS	1	\$	50,000.00	\$	50,000.00
Shelter	LS	1	\$	20,000.00	\$	20,000.00
Shelter Pad	SF	360	\$	4.00	\$	1,440.00
Signage	LS	1	\$	2,000.00	\$	2,000.00
Parking (6 spaces) 1,020 sf compact gravel	CY	37	\$	25.00	\$	925.00
Sidewalks 320 lf x 4'w	SF	1280	\$	6.00	\$	7,680.00
Restrooms						
Concrete Pad (?x?)	SF	240	\$	4.00	\$	960.00
1 Portable	LS	1	\$	750.00	\$	750.00
1 ADA Portable	LS	1	\$	1,000.00	\$	1,000.00
Trees	EA	7	\$	300.00	\$	2,100.00
Optimist Park Grand Total					\$	86,855.00

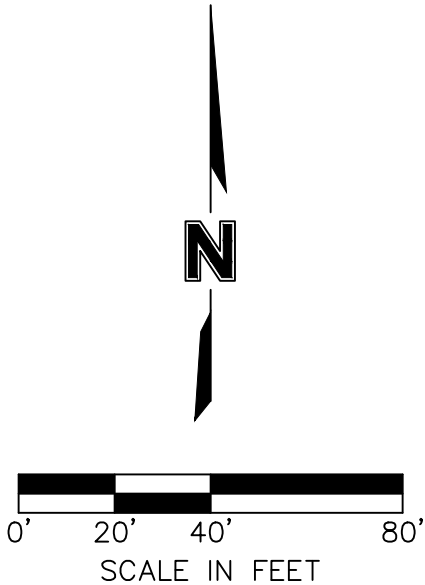


OPTIMIST PARK

- ① PARKING IMPROVEMENT
- ② PLAY STRUCTURE
- ③ SIDEWALKS
- ④ PICNIC SHELTER
- ⑤ OPEN PLAY
- ⑥ NEW TREES
- ⑦ SIGNAGE
- ⑧ RESTROOMS

LEGEND

- CIVIC/SCHOOLS
- PARKS & RECREATION
- EXISTING TRAILS
- SAFE ROUTES TO SCHOOL
- PROPOSED TRAILS



Conrad Park - .17 acres

Conrad Park is small 'pocket' park that has become over-grown and with some re-working, could be a nice feature of the Courthouse area. The wrought iron gazebo and benches could be re-arranged to provide a nice seating/lunch area for downtown visitors.

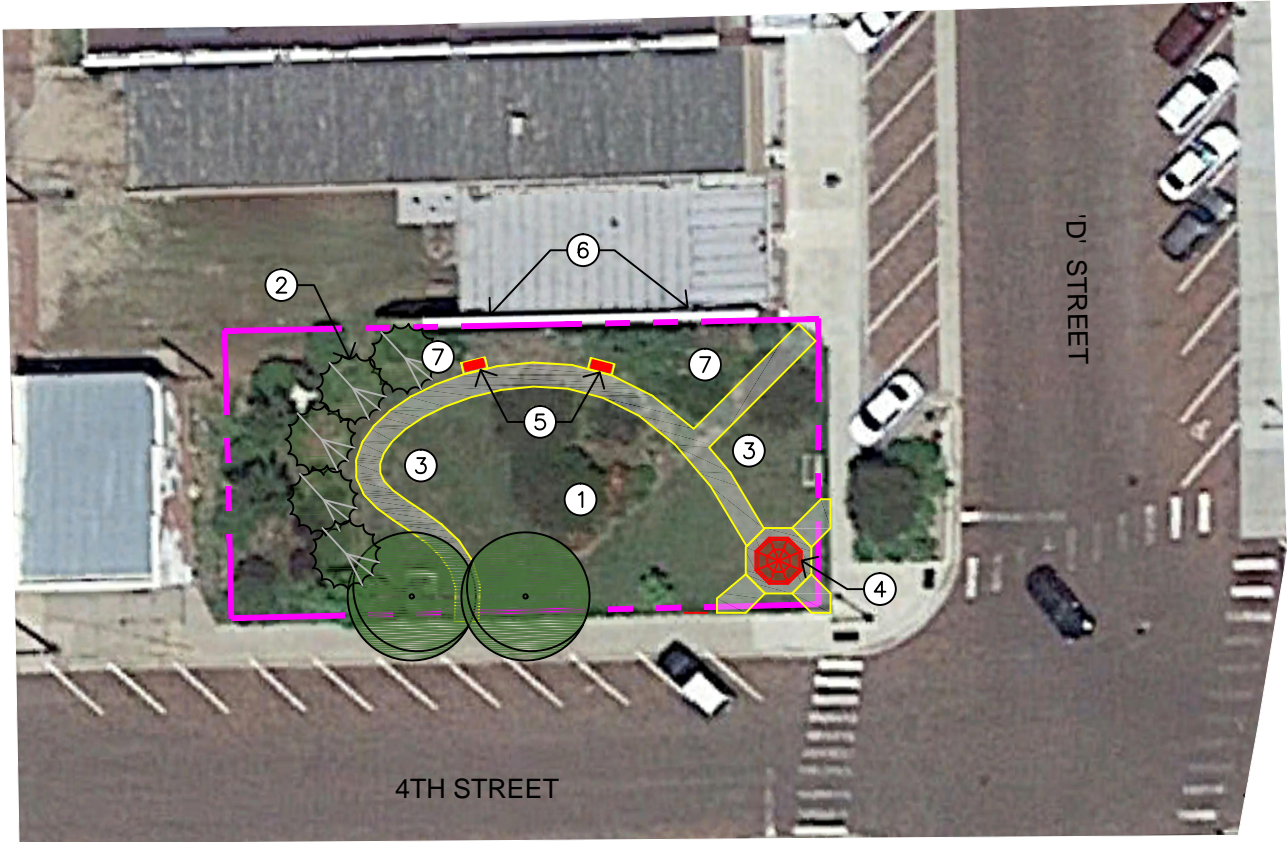


Opportunities for Improvement

1. Remove existing landscaping that has become over-grown.
2. Re-design the park utilizing the gazebo and benches to provide a seating area with landscaping that doesn't obscure visibility into the area
3. Utilize the building wall as an opportunity for an historic mural commemorating the City's history. This mural could be painted or it could be a sculpted clay mural by local artist(s).

Opinion of Probable Cost - Conrad Park

Conrad Park					
Item	Units	Qty	Costs		Total
Sidewalks170 lf x 5'w	SF	850	\$	6.00	\$ 5,100.00
Concrete Pad (Gazebo & benches)	SF	300	\$	4.00	\$ 1,200.00
Trees	EA	6	\$	300.00	\$ 1,800.00
Miscellaneous Landscape	LS	1	\$	2,000.00	\$ 2,000.00
Mural	LS		Donated		
Conrad Park Grand Total					\$ 10,100.00

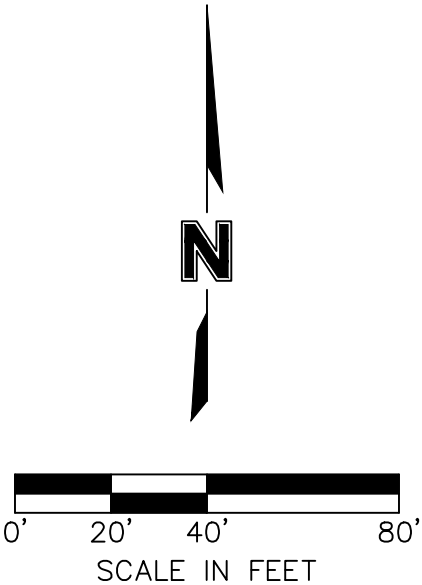


LEGEND

- CIVIC/SCHOOLS
- PARKS & RECREATION
- EXISTING TRAILS
- SAFE ROUTES TO SCHOOL
- PROPOSED TRAILS

CONRAD PARK

- ① REMOVE EXISTING LANDSCAPE
- ② EVERGREEN ADDED FOR SCREENING
- ③ SIDEWALKS
- ④ RELOCATED GAZEBO
- ⑤ RELOCATED BENCHES
- ⑥ MURAL
CLAY RELIEF SCULPTURE OR
PAINTED BY LOCAL ARTISTS
- ⑦ LOW PLANTINGS AS BASE FOR MURAL



Crystal Springs Park – 69.75 acres



Middle Lake Water feature and bridge

Maintained by the Utility Board this park is located southwest of the City, south of the Little Blue River. The two-lane entrance to the park is lined with ash trees, providing a formal entrance to a natural park that provides camping and fishing opportunities in a beautiful setting. There are 60 camp sites with full RV hook up. Among the amenities provided at this park are RV pads and hookups, picnic shelters, a shower house/restroom, and 3 inter-connected lakes that provide fishing opportunities and natural beauty.

Opportunities for Improvement:

1. A planting plan needs to be prepared to replace the Ash trees along the entrance in anticipation of the trees dying. As the Emerald Ash Bore gets closer, different species should be planted maintaining the existing 'boulevard' appearance.
2. Add a dump station.
3. Install an aeration fountain in the middle lake to improve the water quality of the pond.
4. Upgrade playground area with new play structure and safety surfacing.



Playground at west lake RV camping area



Typical Camp Site



0' 75' 150' 300'

SCALE IN FEET

EXISTING INVENTORY

	McNish	City Park	Crystal Springs	Conrad Pocket Park	Optimist Park				TOTAL
ITEM									
Benches	4	2	6	2					14
Picnic Tables	1	33	33						67
Youth Picnic Table									
Trash Cans									
Bike Rack		2							2
Playground	1	1	1		1				4
Concessions		1							1
Restrooms	1	1	1						3
Water Fountain									
Grills		4	10						14
Dumpsters	4								4
Fireplace									
Water Feature	2	1							3
Pond/Lake			3						3
Pavillion									
Picnic Shelters	1	3	4						8
Interior Sidewalk 4'									
Trail 5'									
Trail 10'									
Community Center		1							1
Tennis Courts	2								2
Basketball Hoops (Quinn Field)		2							2
Swimming Pool		1							1
Softball		4							
Baseball (Quinn Field)		1							
Skate Park									
Horseshoe Lanes		15	2						17
Soccer Fields - Youth Size		4							4
Soccer Goals - Full Size		1							1
Soccer Goals - Youth		4							4
Public Art/Memorial	3			1					4
Adjacent Parking	1								1
Campsites			60						60
Parking - Handicapped									
Unique Features									
Boy Scout Cabin	1								1
Train Exhibit		1							1
War Memorial	1								1
Arboretum labels		1							1
*Shared with adjacent uses									
** Full size fields divided									

City of Fairbury - Comparison of Recreation Facilities to National Standards

Park and Recreation Facilities	National Standards	Population Trend			2010		2015		2030		
		Park & Rec	Public Schools	Total (ac)	Need	Surplus (Shortage)	Projected Need	Surplus (Shortage)	Projected Need	Surplus (Shortage)	
City of Fairbury, Nebraska											
Mini Park	0.71 ac	25-50 acres per 1,000	0.71		0.71	2	(1)	2	(1)	2	(1)
Contrat park - 17 acres	0.17 ac										
Optimist Park - 54 acres	0.54 ac										
Neighborhood Park	0.6	1 to 2 acres per 1,000	0		0	8	(8)	8	(8)	8	(8)
School Park	58.18 ac	var. based on school need		3	58.18						
Central Elementary School	3.01 ac			1							
Jefferson Intermediate School	15.57 ac			1							
Fairbury Junior/Senior High	39.6 ac			1							
Community Park	17.9 ac	15 to 8 acres per 1,000	17.9		17.9	32	(14)	31	(13)	31	(14)
McNish Park - 17.9 acres	17.9 ac										
Large Urban Park	75.2 ac	> 50 ac 10 acres per 1,000	75.2		75.2	40	36	39	36	39	36
City Park - 75.2 acres	75.2 ac										
Natural Resource Area	69.75 ac	var.	69.75		69.75	0	70	0	70	0	70
Crystal Springs Park	69.75 ac										
Sports Complex	var.				0	0	(0)	0	(0)	0	(0)
Special Use Area	var.				0	0	0	0	0	0	0
Private Park/Rec. Area	var.				0	0	(0)	0	(0)	0	(0)
Linear Parks & Greenways	.25 mile per 1,000				0	0	0	0	0	0	0
					221.74	82	83	83	83	83	83
Indoor Facilities											
Rec/Community Center	1 per 75,000		1		Existing						
Senior Center	1 per 3,000		1		1	0	1	0	1	0	1
Sports Complex	1 per 100,000		1		1	0	1	0	1	0	1
Gymnasium	1 per 10,000		1		1	0	1	0	1	0	1
Outdoor Facilities											
Picnic Shelter	1 per 8,000		8		8	0	8	0	8	0	8
Community Amphitheater	1 per 100,000				0	0	0	0	0	0	0
Community Garden	1 per 20,000		1		1	0	1	0	1	0	1
Children's Playground	1 per 7,000		2		2	0	2	0	2	0	2
Trail System	1 per region				0	0	(0)	0	(0)	0	(0)
Water/Splash Park	1 per 25,000				0	0	0	0	0	0	0
Swimming Pool/Aquatic Center	1 per 20,000		1		1	0	1	0	1	0	1
Dog Park	1 per 60,000				0	0	0	0	0	0	0
Skate Park	1 per 60,000				0	0	(0)	0	(0)	0	(0)
Courts and Fields											
Tennis Courts	1 per 2,000		2	2	4	0	4	0	4	0	4
Badminton Courts	1 per 5,000				0	0	0	0	0	0	0
Volleyball Courts	1 per 3,000				0	0	(0)	0	(0)	0	(0)
Baseball Diamonds	1 per 5,000		1		1	0	1	0	1	0	1
Basketball Courts	1 per 5,000		2	0.5	3	0	3	0	3	0	3
Football/Rugby Fields	1 per 20,000			2	2	0	2	0	2	0	2
Golf 9 hole Standard	1 per 30,000		1		1	0	1	0	1	0	1
Golf 18 hole Standard	1 per 20,000				0	0	0	0	0	0	0
Golf Driving Range	1 per 50,000		1		1	0	1	0	1	0	1
Handball/Racketball Courts	1 per 20,000				0	0	0	0	0	0	0
Homesite Courts	1 per 2,000		15		15	0	15	0	15	0	15
Running Track - 400m	1 per 20,000			2	2	0	2	0	2	0	2
Soccer Fields	1 per 10,000		4		4	0	4	0	4	0	4
Softball/Tee Ball Fields	1 per 2,500		4	4	4	0	4	0	4	0	4



Executive Summary

Fairbury City + 1 mile
City of Fairbury, United States
Rings: 1 mile radii

Prepared by Esri
Latitude: 40.14382
Longitude: -97.17650

Population		1 mile
2000 Population		4,305
2010 Population		3,954
2015 Population		3,919
2020 Population		3,931
2000-2010 Annual Rate		-0.85%
2010-2015 Annual Rate		-0.17%
2015-2020 Annual Rate		0.06%
2015 Male Population		48.2%
2015 Female Population		51.8%
2015 Median Age		45.1

In the identified area, the current year population is 3,919. In 2010, the Census count in the area was 3,954. The rate of change since 2010 was -0.17% annually. The five-year projection for the population in the area is 3,931 representing a change of 0.06% annually from 2015 to 2020. Currently, the population is 48.2% male and 51.8% female.

Median Age	
The median age in this area is 45.1, compared to U.S. median age of 37.9.	
Race and Ethnicity	
2015 White Alone	93.9%
2015 Black Alone	0.6%
2015 American Indian/Alaska Native Alone	0.7%
2015 Asian Alone	0.4%
2015 Pacific Islander Alone	0.0%
2015 Other Race	1.6%
2015 Two or More Races	2.9%
2015 Hispanic Origin (Any Race)	4.6%

Persons of Hispanic origin represent 4.6% of the population in the identified area compared to 17.6% of the U.S. population. Persons of Hispanic Origin may be of any race. The Diversity Index, which measures the probability that two people from the same area will be from different race/ethnic groups, is 19.7 in the identified area, compared to 63.0 for the U.S. as a whole.

Households	
2000 Households	1,899
2010 Households	1,786
2015 Total Households	1,786
2020 Total Households	1,796
2000-2010 Annual Rate	-0.61%
2010-2015 Annual Rate	0.00%
2015-2020 Annual Rate	0.11%
2015 Average Household Size	2.14

The household count in this area has changed from 1,786 in 2010 to 1,786 in the current year, a change of 0.00% annually. The five-year projection of households is 1,796, a change of 0.11% annually from the current year total. Average household size is currently 2.14, compared to 2.16 in the year 2010. The number of families in the current year is 1,022 in the specified area.

Data Note: Income is expressed in current dollars

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020. Esri converted Census 2000 data into 2010 geography.

July 28, 2015

Executive Summary

Fairbury City + 1 mile
City of Fairbury, United States
Rings: 1 mile radii

Prepared by Esri
Latitude: 40.14382
Longitude: -97.17650

	1 mile
Median Household Income	
2015 Median Household Income	\$40,072
2020 Median Household Income	\$48,986
2015-2020 Annual Rate	4.10%
Average Household Income	
2015 Average Household Income	\$56,538
2020 Average Household Income	\$66,241
2015-2020 Annual Rate	3.22%
Per Capita Income	
2015 Per Capita Income	\$25,768
2020 Per Capita Income	\$30,252
2015-2020 Annual Rate	3.26%

Households by Income

Current median household income is \$40,072 in the area, compared to \$53,217 for all U.S. households. Median household income is projected to be \$48,986 in five years, compared to \$60,683 for all U.S. households

Current average household income is \$56,538 in this area, compared to \$74,699 for all U.S. households. Average household income is projected to be \$66,241 in five years, compared to \$84,910 for all U.S. households

Current per capita income is \$25,768 in the area, compared to the U.S. per capita income of \$28,597. The per capita income is projected to be \$30,252 in five years, compared to \$32,501 for all U.S. households

Housing	
2000 Total Housing Units	2,150
2000 Owner Occupied Housing Units	1,344
2000 Renter Occupied Housing Units	556
2000 Vacant Housing Units	250
2010 Total Housing Units	2,148
2010 Owner Occupied Housing Units	1,184
2010 Renter Occupied Housing Units	602
2010 Vacant Housing Units	362
2015 Total Housing Units	2,169
2015 Owner Occupied Housing Units	1,143
2015 Renter Occupied Housing Units	643
2015 Vacant Housing Units	383
2020 Total Housing Units	2,169
2020 Owner Occupied Housing Units	1,153
2020 Renter Occupied Housing Units	642
2020 Vacant Housing Units	373

Currently, 52.7% of the 2,169 housing units in the area are owner occupied; 29.6%, renter occupied; and 17.7% are vacant. Currently, in the U.S., 55.7% of the housing units in the area are owner occupied; 32.8% are renter occupied; and 11.6% are vacant. In 2010, there were 2,148 housing units in the area - 55.1% owner occupied, 28.0% renter occupied, and 16.9% vacant. The annual rate of change in housing units since 2010 is 0.43%. Median home value in the area is \$74,164, compared to a median home value of \$200,006 for the U.S. In five years, median value is projected to change by 4.48% annually to \$92,342.

Data Note: Income is expressed in current dollars

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020. Esri converted Census 2000 data into 2010 geography.

July 28, 2015

Based on current census data, the City of Fairbury has an LMI number of 47.74% which does not qualify them for CDBG funding. An updated income survey might improve eligibility.

Recreation Expenditures

Fairbury City + 1 mile
City of Fairbury, United States
Ring: 1 mile radius

Prepared by Esri
Latitude: 40.14382
Longitude: -97.17650

Demographic Summary		2015	2020
Population		3,919	3,931
Households		1,786	1,796
Families		1,022	1,024
Median Age		45.1	45.4
Median Household Income		\$40,072	\$48,986
	Spending Potential Index	Average Amount Spent	Total
Entertainment/Recreation Fees and Admissions			
Admission to Movies, Theater, Opera, Ballet	56	\$362.88	\$648,099
Admission to Sporting Events, excl. Trips	57	\$93.20	\$166,464
Fees for Participant Sports, excl. Trips	70	\$46.52	\$83,076
Fees for Recreational Lessons	53	\$63.82	\$113,988
Membership Fees for Social/Recreation/Civic Clubs	53	\$64.82	\$115,776
Dating Services	55	\$94.10	\$168,056
Rental of Video Cassettes and DVDs	68	\$0.41	\$741
Toys & Games			
Toys and Playground Equipment	75	\$17.56	\$31,371
Play Arcade Pinball/Video Games	80	\$97.85	\$174,765
Online Entertainment and Games	80	\$92.63	\$165,442
Recreational Vehicles and Fees			
Docking and Landing Fees for Boats and Planes	68	\$2.09	\$3,735
Camp Fees	78	\$3.13	\$5,588
Purchase of RVs or Boats	113	\$246.04	\$439,434
Rental of RVs or Boats	81	\$7.95	\$14,203
Sports, Recreation and Exercise Equipment			
Exercise Equipment and Gear, Game Tables	44	\$14.52	\$25,924
Bicycles	131	\$218.69	\$390,589
Camping Equipment	65	\$4.88	\$8,718
Hunting and Fishing Equipment	90	\$170.98	\$305,371
Winter Sports Equipment	91	\$69.75	\$124,571
Water Sports Equipment	56	\$16.83	\$30,061
Other Sports Equipment	57	\$9.61	\$17,164
Rental/Repair of Sports/Recreation/Exercise Equipment	118	\$49.50	\$88,412
Photographic Equipment and Supplies			
Film	109	\$6.50	\$11,610
Film Processing	96	\$6.22	\$11,106
Photographic Equipment	119	\$9.50	\$16,960
Photographer Fees/Other Supplies & Equip Rental/Repair	100	\$3.07	\$5,485
Reading			
Magazine/Newspaper Subscriptions	63	\$50.85	\$90,818
Magazine/Newspaper Single Copies	60	\$0.72	\$1,279
Books	95	\$11.76	\$21,001
Digital Book Readers	53	\$20.90	\$37,333
	62	\$17.47	\$31,205
	78	\$118.83	\$212,224
	87	\$47.13	\$84,180
	79	\$12.27	\$21,913
	73	\$46.48	\$83,007
	72	\$12.95	\$23,124

Data Note: The Spending Potential Index (SPI) is household-based, and represents the amount spent for a product or service relative to a national average of 100. Detail may not sum to totals due to rounding.

Source: Esri forecasts for 2015 and 2020; Consumer Spending data are derived from the 2011 and 2012 Consumer Expenditure Surveys, Bureau of Labor Statistics.

July 28, 2015

Part II: Municipal Swimming Pool Evaluation

The Fairbury Municipal Swimming Pool is located in the northwest corner of the Fairbury City Park. Located within the Fairbury Pool complex, is a concession stand, park restrooms and a picnic shelter/gazebo. The Fairbury Municipal Swimming Pool was designed in 1952 by the engineering firm of Kenneth H. Larkin & Associates in Kansas City, Missouri and was constructed in 1953 and refurbished in 1990.

The Bathhouse has served the Fairbury community for the past 63 years and while it remains a solid building to this day, it lacks the functionality, efficiency and amenities that are expected of a modern bathhouse design. The assessment of the existing bath house identifies any deficiencies and design issues, including the functionality, efficiency and accessibility.

The assessment of the pool basin and associated equipment will consist of the evaluation of the Filter System, Recirculation System, Chemical Treatment System, Diving Boards, Slide, Deck Area, Pool Basin, Bathhouse, and Site Improvements. The Deficiencies were identified using Nebraska Health and Human Services, Title 178, NAC 4 standards, YMCA Competitive Swimming and Diving Programs standards, and NCAA Men's & Women's Swimming and Diving Standards.

Fairbury Municipal Pool - Bathhouse



Existing Bathhouse Condition Assessment:

Structural

The existing bathhouse structure is comprised of clay masonry bearing walls with a structural concrete slab roof and concrete slab-on-grade floors. The structure has performed remarkably well given its 63 years of heavy usage and exposure to the elements with only the following issues of note:



The dressing areas are open to the sky which raises the concern about visual privacy and is an open invitation for trespassing and vandalism. While this is not a structural issue it is recognized that a roof structure will need to be added over the dressing areas if the existing bathhouse were to be saved and renovated.



Slight foundation settlement has occurred at the southwest corner as indicated by the stepped diagonal crack in the masonry mortar joints.





Slight foundation settlement has also occurred at the west door to the public restroom. All other areas of the bathhouse appear to be structurally stable.



The structural stability of the single wythe clay masonry partitions that are unsupported at the top present a significant safety concern. It is not known if these walls are reinforced, but it should be noted that it would be difficult to achieve the code required lateral resistance with new reinforced masonry walls of similar thickness that are unsupported at the top.

Roof

A new roof and flashing system was installed in 2014.

Accessibility

Toilet and shower facilities do not conform to ADA accessibility requirements in size, clearance, arrangement or fixture type.



Accessible maneuvering space is achieved in the male gender restroom by eliminating a toilet partition and door and presenting the toilet open to the dressing area.



Female Gender Restroom

Infrastructure



Plumbing fixture and exposed piping upgrades have been made in years past. The plumbing system is still serviceable, but is aging and will need to be replaced in time.



The electrical power distribution and lighting systems have been upgraded in years past, but are aging and will need to be replaced in time.

Design Program & Considerations:

Patron Capacity

The Fairbury Municipal Pool Bathhouse will serve several user groups through the summer months according to the following typical daily schedule:

- 10:00 – 11:00am / Swim Team practice with 50 – 60 users.
- 11:00am – 8:00pm / Recreational and leisure use with 100 patrons per day on prime days.
- 8:30 – 10:30pm / Private parties.

The Fairbury Swim Team hosts one (1) competitive swim meet per year that involves four (4) teams. There are eight (8) teams in the league and on occasion Fairbury will host an all-league swim meet that will involve as many as 200 competitors with a total of 350 competitors and spectators present. As such, a maximum bathhouse patron load of 250 patrons is desirable in order to limit the toilet fixture requirement to four (4) toilets on the female side and two (2) toilets / two (2) urinals on the male side.

Family Changing Rooms

Family changing rooms address the issue of parents taking their children into an open changing room populated by the opposite gender. They also allow care givers to accompany and attend to a person of the opposite gender.

Concessions

Pool concessions is managed and operated on a day to day basis by the Fairbury Pool Staff. During swim meets, the Fairbury Swim Team operates the concessions as a fund raising endeavor. Concessions should be located such that they can also directly serve the patrons at the soccer field complex west of the swimming pool. The competitive soccer season begins one month before the opening of the swimming pool, so access to the concessions area will need to be provided outside of the pool season and hours.

Storage

A separate metal shed provides much needed storage for the equipment that is required for swim meets as well as general recreational use. This storage should be integrated into the bathhouse structure.

Public Restrooms

Separate public restrooms that are accessed directly from the park outside of the pool operation are included in the design. These restrooms should be located on the west side of the bathhouse to directly serve the soccer field patrons.

Storm Shelter

Consideration should be given to design a portion of the bathhouse as a storm shelter that would be used by pool patrons during severe storm events when the pool is open and occupied.

Durability

The existing bathhouse is a good example of durable and corrosion resistant construction that has endured many years of heavy use and exposure to the elements. The life-cycle cost benefit of the initial investment in 1952 is readily apparent.

Ventilation

The bathhouse will rely on the ventilation of outside air through the building for patron and staff comfort. The design should integrate a mechanical intake and exhaust fan system as well as maximize the opportunity to effectively utilize natural ventilation. To that end, the long east-west orientation of the existing bathhouse with its narrow north-south section is ideal for taking advantage of the southeast breezes that are prevalent during the summer months. All three of the design options that are presented as part of this study feature ventilation louvers in the upper portion of the perimeter walls. These louvers are part of the secure building envelope and also serve to block vision into the dressing, shower and toilet areas.

Mechanical ventilation would be accomplished with through-wall exhaust fans located above the public restrooms on the west end and high in the storage room on the east end. Outside air is drawn in through the ventilation louvers and across the dressing, locker and toilet areas on calm, humid, summer days. The public restrooms and concessions would be connected to the exhaust system. The center pool office space would have its dedicated through-wall exhaust fans located high on the north wall to work in conjunction with prevailing summer breezes from the southeast. Intake air fans would be integrated into the upper ventilation louvers to assist in pulling outside air into the building. Overhead circulation fans could also be installed in the dressing areas to move air and improve patron comfort.

Design Options:

The three design options that follow are presented as part of this study. Option “A” illustrates how the existing bathhouse could be reused, modified and added onto such that it meets the design program and considerations outlined above. Options “B” and “C” share a common floor plan and illustrate two approaches to design and construction type.

All three options are programmatically similar based on a maximum patron load of 250. Nebraska Department of Health and Human Services minimum bathhouse fixture count requirements for this patron load are as follows:

- Male / 2 toilets, 2 urinals, 1 sink and 3 showers.
- Female / 4 toilets, 2 sinks and 3 showers.

Each option includes two (2) family changing rooms. While one shared changing room could be adequate, one is shown on each of the two gender sides with one of each gender’s required toilets accounted for in the family changing room.

Renovated & Expanded Existing Pool House – Design Option A

This option utilizes much of the existing bathhouse structural shell with internal modifications where necessary and additions at both the east and west ends. New roofs would be structured over the open dressing areas. The mechanical, electrical and plumbing systems would be completely removed and replaced.

New Pool House – Design Option B

This option replaces the existing bathhouse with a completely new facility. The design envisions both clay and concrete masonry construction to 10’-0” above the floor level.

The roof is comprised of precast concrete hollow core units and is supported by exposed steel beams and stub columns that are seated on the outside masonry bearing walls. The roof is shaped for internal rain water management and to support the use of solar hot water heat panels.

The space between the top of the walls and the roof is infilled with aluminum ventilation louvers that allow natural cross-ventilation, restrict sightlines into the bathhouse and provide secure building envelope.

New Pool House – Design Option C

This option is a variation of Option B as described above in that it utilizes architectural precast concrete wall panels as means of achieving both structural support of the roof and material durability in one system.

The roof is comprised of precast concrete hollow core units as Option - B, but in a single slope configuration that could support the use of hot water heating panels.

Cross-ventilation is achieved through aluminum louvers that are mounted in the opening of the pre-cast concrete wall panels.

Statement of Probable Construction Cost:

The following probable construction costs are based on \$/sf averages at the time of this study and do not include inflation factors for a future implementation date, movable equipment costs or design fees.

Option A

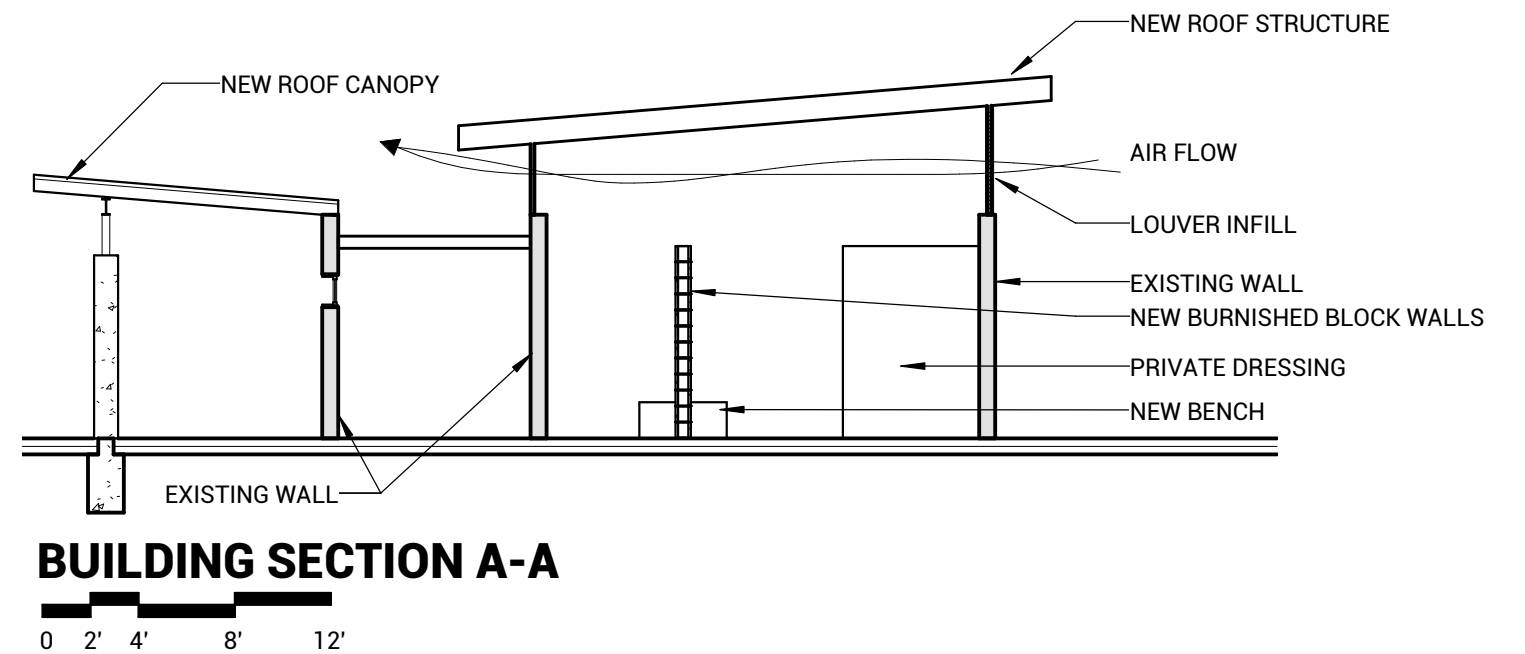
- Selective demolition	2,450 sf @ \$ 10/sf =	\$ 24,500
- Existing building remodel	2,450 sf @ \$100/sf =	245,000
- New additions	1,080 sf @ \$150/sf =	162,000
- <u>Covered deck</u>	<u>1,440 sf @ \$ 50/sf =</u>	<u>72,000</u>
Total Construction Cost		\$503,500

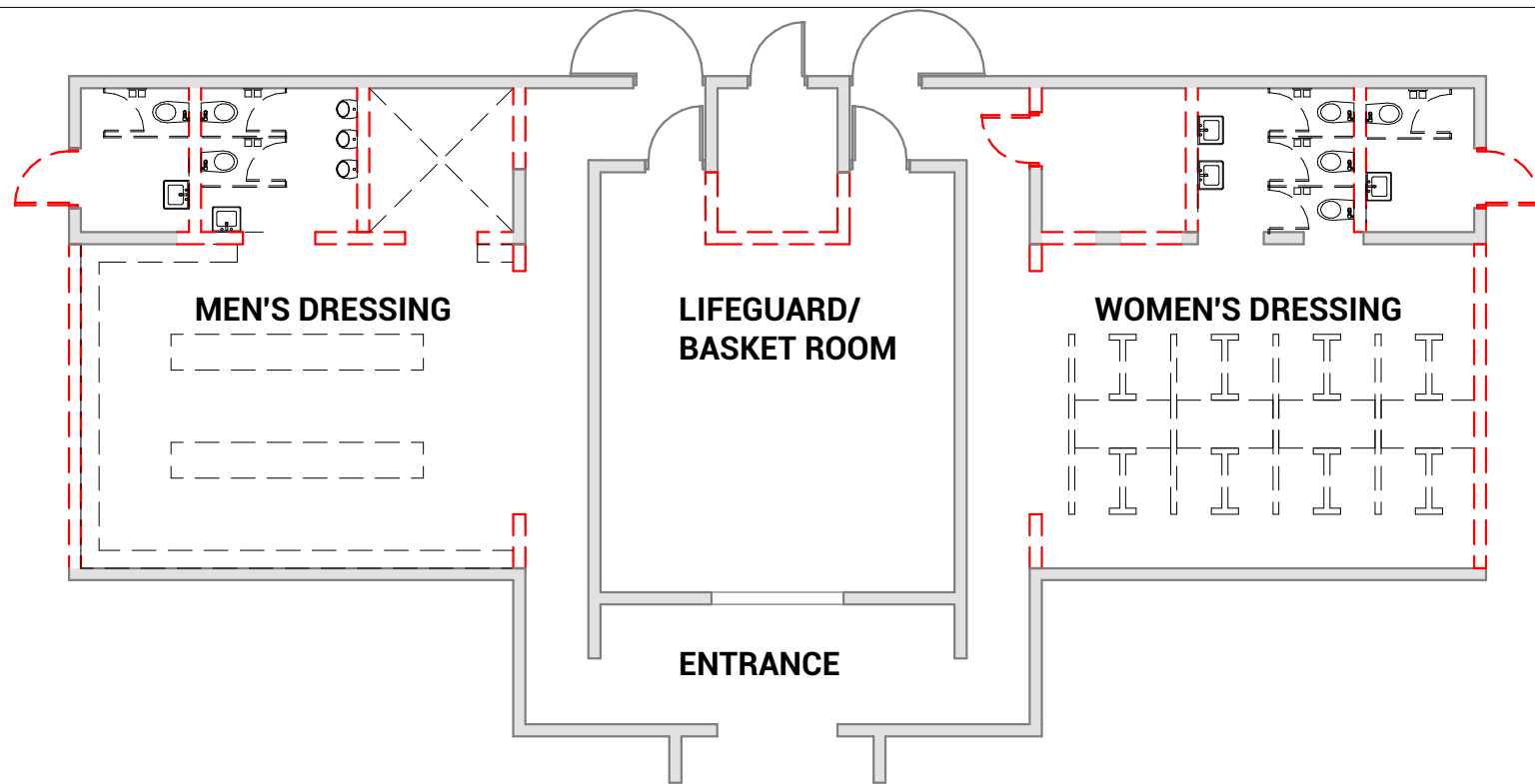
Options B and C

- Complete demolition	2,450 sf @ \$ 15/sf =	\$ 36,750
- New bathhouse	3,630 sf @ \$150/sf =	544,500
- <u>Covered deck</u>	<u>1,520 sf @ \$ 50/sf =</u>	<u>76,000</u>
- Total Construction Cost		\$657,250

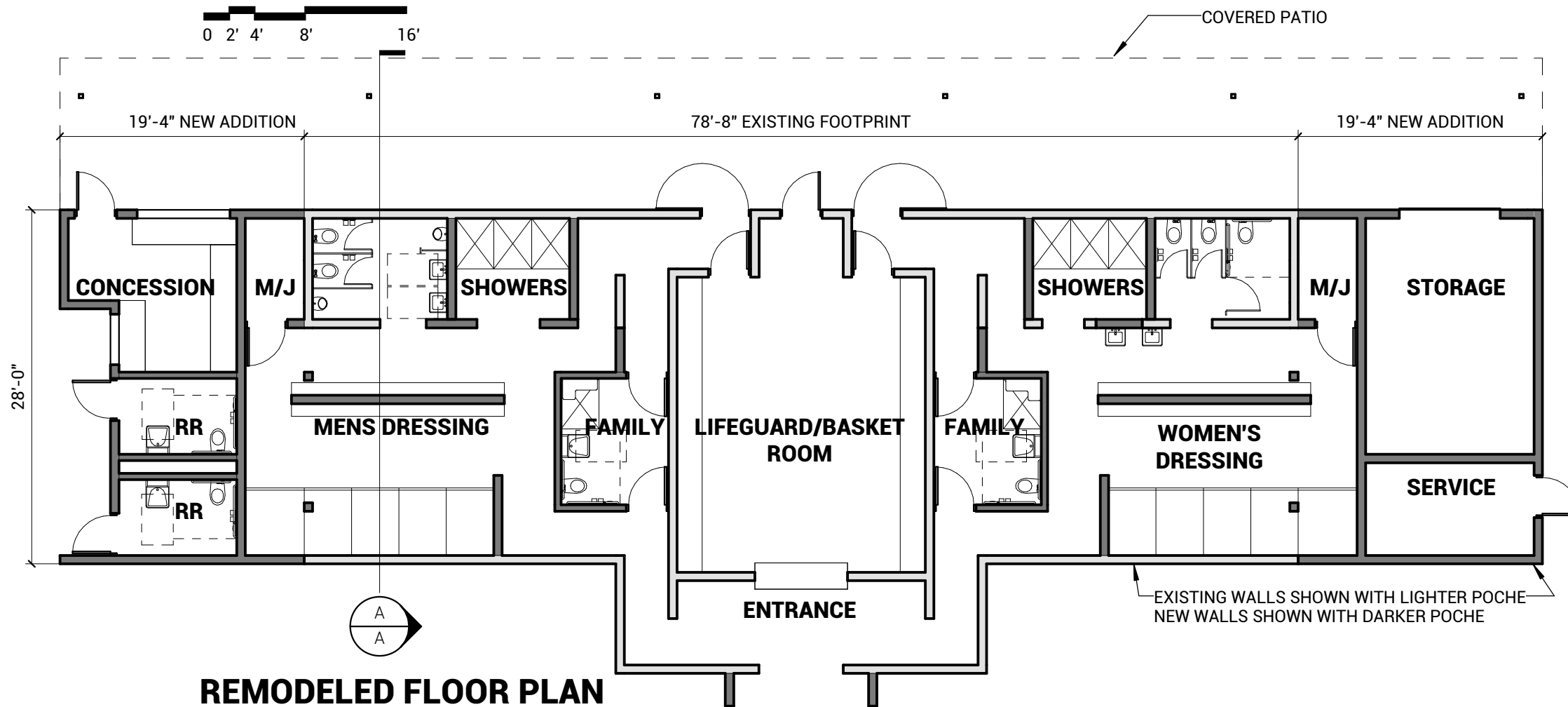
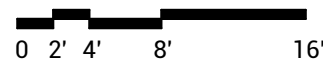


EXTERIOR CONCEPT

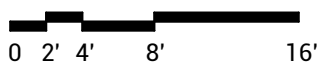


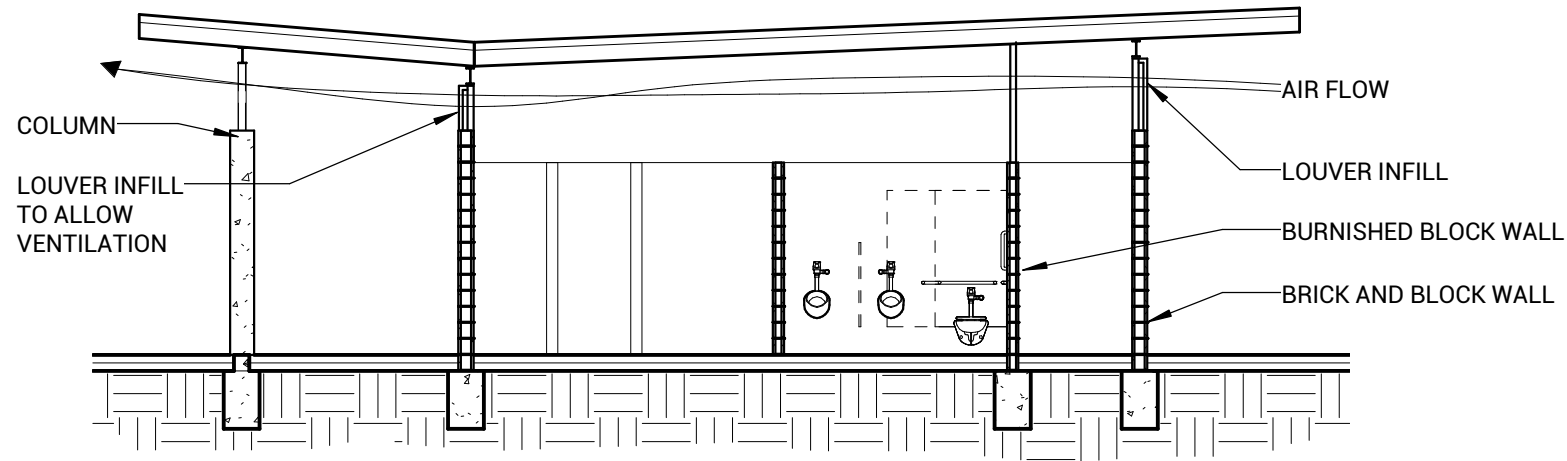


EXISTING FLOOR PLAN SHOWING DEMOLITION



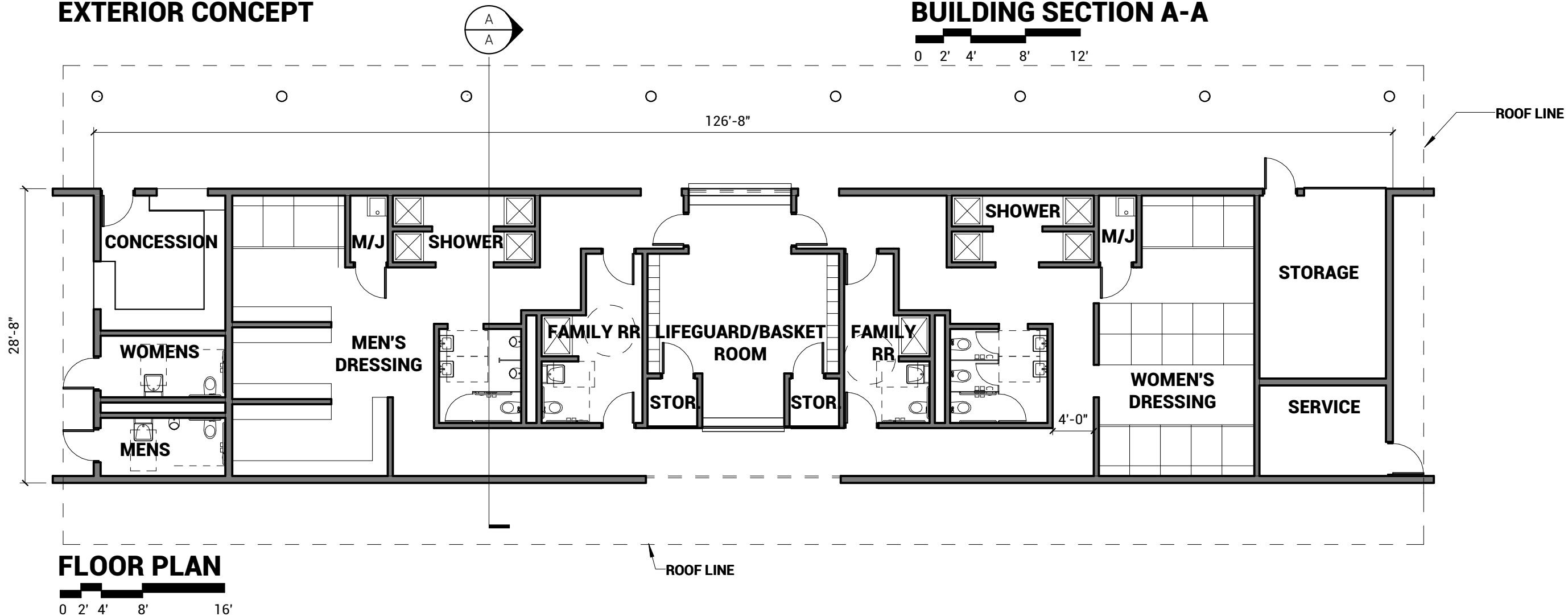
REMODELED FLOOR PLAN





EXTERIOR CONCEPT

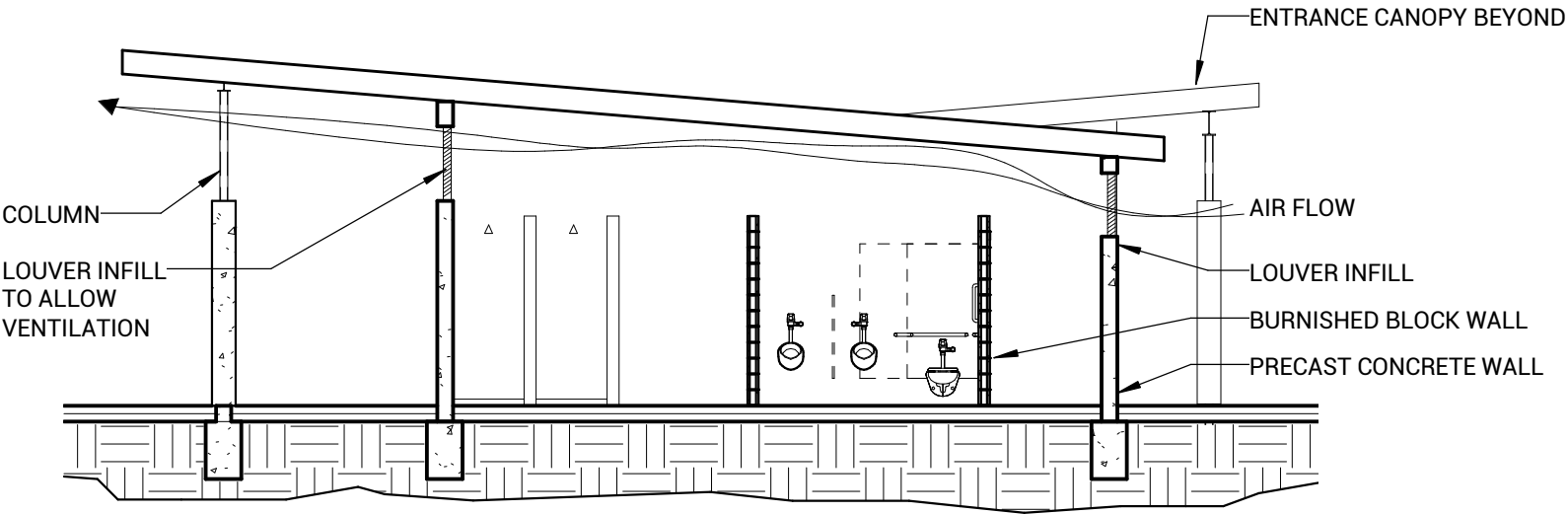
BUILDING SECTION A-A



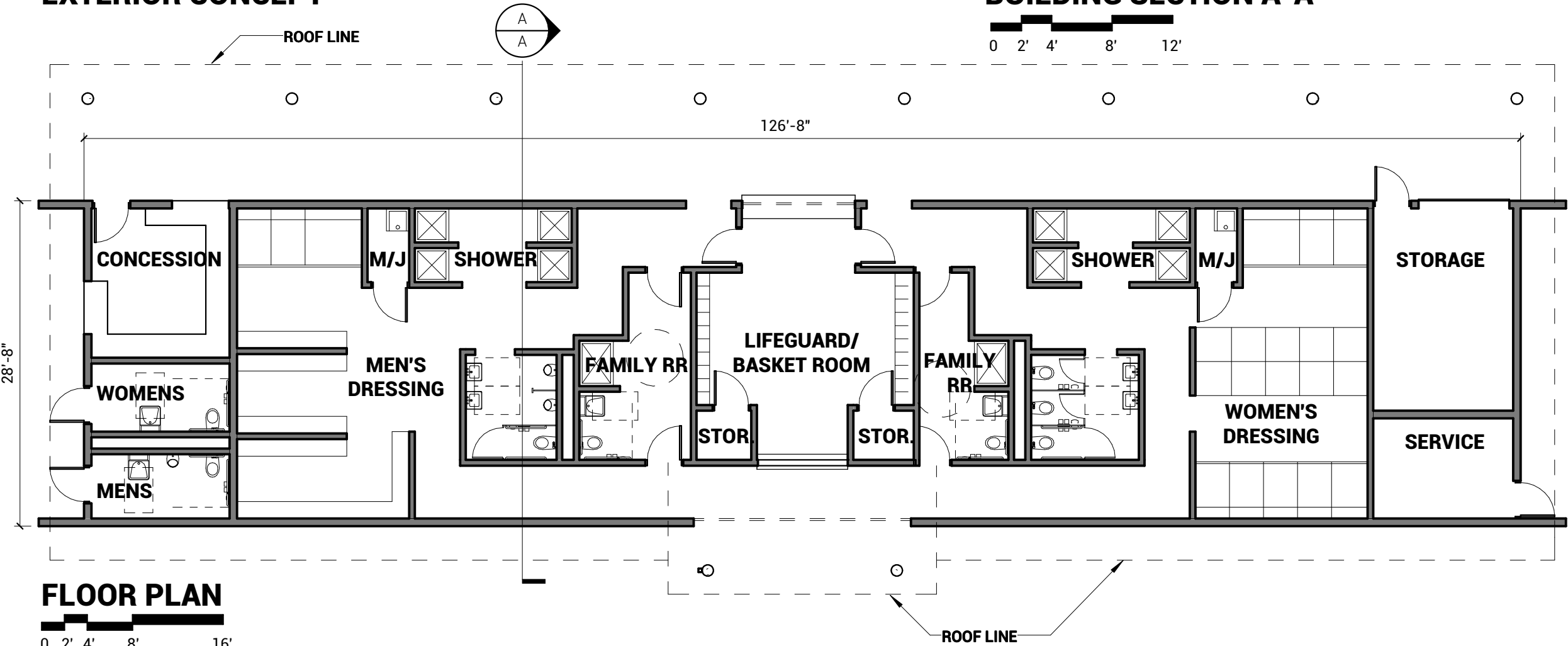
FLOOR PLAN



EXTERIOR CONCEPT



BUILDING SECTION A-A



FLOOR PLAN

Analysis of Existing Pool Basin

The City of Fairbury contacted Olsson about the swimming pool, the City was having some issues with water loss. The City and pool staff were noticing that for the past several years during the swimming season the pool continued to lose water which made operation of the pool difficult. The staff had to adjust the pH levels more frequently and also more disinfectant was used due to the extra water needing to be added into the pool. The pool area is approximately 22,155 square feet within the fenced area, of which 8,770 square feet is the main pool basin and 820 square feet is the wading/kiddy pool area. The main pool has a capacity of 300,000 gallons of water with the depth ranging from 3 feet to 12 feet deep and the wading/kiddy pool has a capacity of 9,200 gallons of water with the depth ranging from 1 foot to 2 feet.

1. Pool Basin – The concrete pool basin is in fairly good condition. Visual and non-destructive testing were used to check for concrete cracking, concrete strength, sealant present, and any settling/separation of the pool basin. Non-destructive concrete tests (rebound hammer) on the pool basin yielded strengths greater than 4000 psi except where patchwork had been done in the diving well south of the main drain. These areas showed a considerable decrease in strength which could be due to a possible void under the concrete basin. This area was also sounded with a hammer which also indicated a void under the concrete basin. The remainder of the pool basin has hairline cracking in various areas and the construction joints are not properly sealed and may be allowing the pool basin to leak. The diving well meets the requirements for a one meter board but not a three meter board. Handicap access consists of a portable chair lift and requires staff to assist ADA patrons by setting up and operating the chair lift. The competitive swim lanes do not meet the current regulations for starting water depth for diving off of blocks as per the YMCA and NCAA guidelines.

2. Main Drain Structure & Piping - The main drain structure has severe cracking and deterioration. With the cracking and deterioration of the structure, it is a possibility that water is leaking out of the pool and could have caused the void on the south side of the main drain.



Main Drain Structure

During our inspection, the City of Fairbury's Utility Department ran a camera through the main drain to look at the pipe condition. After viewing the inspection, the main drain system piping was in fair condition. The pipe did have some scaling and buildup on the walls but the joints appeared to be tight and not leaking. There is also some debris throughout the line but could be cleaned by jetting. This area of the piping is the original piping installed in 1952.

3. Lighting – The original pool design included both underwater and overhead lighting for night swimming. The underwater lighting was abandoned during the pool remodel in 1990. The abandoned underwater light boxes had open conduits which currently are not in service and could have been a source of water leaking from the pool. Before the 2015 swimming season, the City staff placed caulking in the open conduit to mitigate potential leaking.



Abandoned Underwater Light Boxes

4. Pool Deck - The pool deck area is in good condition. The current deck area drains away from the pool and a drainage system was updated during the 1990 remodel. The pool deck area does meet the current standards for distances between the pool and fence but does not leave much room for layout areas or for spectators to watch swim competitions. Hose bids are available for deck washing near the bathhouse.

5. Wading Pool and Kiddie Pool



- a. Wading Pool – The concrete wading pool appears to be in good condition and only shows minor hairline cracks. The primary concern with the wading pool is the circulation system which will be discussed later in this report.
 - b. Kiddie Pool – The concrete kiddie pool appears to be in good condition and only shows minor hairline cracks. The primary concern with the kiddie pool is the circulation system which will be discussed later in this report.
6. Filter System – The filter system for the pool is a gravity sand filter comprised of four chambers. The filter system appears to be in fair condition and the filter sand has been recently replaced. The filter capacity is approximately 850 gpm. The filter system does not have the capacity to meet the current required turnover rates for a pool this size. To meet the current turnover rate requirements the capacity would need to be about 1,375 gpm.
7. Circulation System
- a. Main Pool – The main pool currently utilizes a gravity main drain and a perimeter concrete gutter system. The circulation piping for the pool was updated in the 1990 remodel. These systems meet current standards for water skimming and draining but do not meet the current standards for turnover rates.

- b. Wading Pool – The wading pool currently utilizes one overflow mushroom pipe. Current standards require all pools to provide continuous skimming which the mushroom pipe does not allow. The turnover rate for the wading pool is unknown because there is no way to measure the return flow coming into the wading pool due to it being tied into the main pool circulation piping.
 - c. Kiddie Pool – The kiddie pool currently utilizes one overflow mushroom pipe. Current standards require all pools to provide continuous skimming which the mushroom pipe does not allow. The turnover rate for the kiddie pool is unknown because there is no way to measure the return flow coming into the kiddie pool due to it being tied into the main pool circulation piping.
8. Chemical Treatment – The chemical treatment for the pool is a Rainbow Lifeguard HC-3340 system which uses 1” chlorine tablets for disinfection. This setup is not automated and will need to be upgraded to meet current regulations. Water quality can be an issue with the existing pool. To control the pH levels in the pool, staff manually tests the levels and adds in the appropriate soda ash to bring the pH to an acceptable level. The water loss in the basin creates additional chemical costs due to the make-up water that is needed to maintain water levels in the pool. The existing chemical storage building is in poor condition with limited ventilation and will need to be upgraded to meet current regulations.

9. Diving Boards – The diving boards are 1 meter boards and are in fair condition and meet current standards. Whether a new pool basin is constructed or the existing pool basin is refurbished, these boards could be reused.



10. Slide – The existing slide is fairly new and in good condition. If the existing pool was to be updated, the current slide could be reused. If a new pool basin was constructed, the slide could potentially be reused depending on the new pool layout.



11. Lifeguard Chairs – There are currently 4 lifeguard chairs around the pool basin. The lifeguard chairs are in fair condition. They are placed in the appropriate locations so that the lifeguards are able to maintain surveillance of all pool floor areas.



12. Parking/Sidewalks – Parking is in place on both the north and south sides of the pool. Both parking areas are asphalt and in fair condition and should meet the demand for patron parking. These parking areas could use some paint striping to distinguish parking stalls. With these areas being close to the pool, they could possibly be damaged during construction of either a new basin or remodeling of the existing basin. If these were damaged it would be recommended to replace them with 6" concrete and add on 6" curb and gutter. Currently there are sidewalk all around the pool area. These sidewalks are in good condition and meet ADA

requirements. With any construction activities at the pool or bathhouse, these sidewalks would need to be replaced.

13. Site Improvements – The site around the pool area consists of mostly green space. While this is a great feature, the area does lack seating and viewing areas. The only sitting/viewing area close to the pool now is a gazebo structure just east of the bathhouse. This structure appears to be in good condition but has a limited number of seating.

For security at the pool there is a 6' chain link fence around the pool with a 4' chain link fence between the main pool basin and the wading and kiddie pools. The fence is in good condition and meets current regulations. Any construction activities at the pool or bathhouse would need to have the fence removed and it would be recommended that an 8' chain link take its place. This additional 2' would help improve security around the pool.

The existing pool area and site also utilize a small metal utility shed on the west side of the bathhouse. This shed is used to store pool equipment for everyday operations and equipment for swim competitions. The shed is in good condition but the staff must leave the pool area to access the equipment. It would be recommended to incorporate a storage area into the bathhouse for better security and easier access for the pool staff.

In 2010 Olsson Associates had completed a drainage study for the City of Fairbury. One of the areas of concern was the area around the pool. Currently this area has an area inlet east of the bathhouse and connects to a 24" storm pipe which flows south under Frederick Street and eventually outlets into the south side of the levee. The recommendation from the drainage study was to clean the line due to large amounts of debris limiting the amount of runoff that could be handled. According to the drainage study, this area does add a fair amount of storm water to the Frederick Street system and cannot take on much more of a drainage area without upsizing the Frederick Street system. If the north and south parking areas were to be reconstructed it would be recommended to install curb inlets to pick up the surface drainage and tie them into the existing 24" storm sewer pipe.

Summary

The diving well of the pool basin is in need of replacement due to the water loss through the cracks in the main drain structure, poor concrete testing, and possible voids under the concrete floor. Temporary patching of the main drain structure could extend the life of the basin but should not be used as a permanent fix. In order to continue to host competitive swimming events, the pool depth needs to be increased to meet the YMCA diving standards. The current standards for competitive swimming require the shallow end of the pool to be at least 5 feet deep for YMCA regulations and 7 feet deep for NCAA regulations. To get to the minimum depth, the pool deck would need to be raised at least 2 feet. The deck is in good condition but would need to be removed in its entirety to allow the pool basin wall height to be extended to meet depth requirements for competitive swimming. The wading and kiddie pools are in good condition structurally. The circulation system needs upgraded. Installation of a new stainless steel gutter system is recommended. The filter system, recirculation system, and chemical treatment system all operate as originally designed in 1952 and 1990, but requires manual handling of chemicals and manual testing. A new chemical system is required to meet current standards. The current standards for the recirculation rates are:

1. A pool turnover rate of 1 pool every 1 hour or less for the wading and kiddie pools
2. A pool turnover rate of 1 pool every 4 hours or less for the 3 foot to 5 foot depths
3. A pool turnover rate of 1 pool every 6 hours or less for any depth over 5 feet

Based on the existing pool configuration and as mentioned before, the filtering requirements would need to be increased from 850 gpm to around 1,375 gpm. The current filter would need to be replaced to achieve this capacity.

The diving boards, slide, and lifeguard chairs are in fair condition and meet current standards. The current site improvements such as parking, sidewalk, and seating areas are in good condition but any pool modifications may require these areas to be modified. The complete pool evaluation can be seen in Appendix A.

Concepts and Cost Analysis

As part of this study, Olsson Associates and BVH prepared possible concepts for rehabilitating the original pool basin and bathhouse and proposing new layouts with new bathhouse options. During our kick-off meeting, the City of Fairbury and the swim team coordinators requested to see specific activities incorporated into the new layouts. These activities included: 1. competitive swim lanes 2. a zero entry entrance with water activities 3. a diving well and slide and 4. open deck areas for patrons to relax and be able to view swim competitions. Below is a breakdown of each of the four concepts put together for this study.

1. Concept "A"

Concept "A" utilizes the original pool basin and new bathhouse. This concept would consist of removing and replacing the pool floor in the diving basin and extending the pool walls up at least 2 feet to be able to meet the YMCA requirements for competitive swimming competitions. Additional water features include a double slide, and 1 and 3 meter diving boards. This design would also require all decking to be removed and replaced and would eliminate both the wading and kiddie pools and replace them with a double splash pad. Also with this concept would be a small green space area for resting and shade. The cost of Concept "A" can be seen below:

- Remodeled Pool Basin	\$1,319,400.00
o Demo Diving Basin	\$7,000
o Remove Top Pool Curb	\$10,000
o Concrete Diving Basin	\$26,000
o Concrete Pool Curb	\$52,500
o 5" Concrete Deck	\$161,200
o Pumps, Piping, Filter	\$200,200
- New Bathhouse	\$657,250.00
- Mechanical Building	\$145,630.00
- Splash Pads	\$135,450.00
o Splash Pads	\$60,000 Ea.
o 5" Concrete Deck	\$15,500
- Water Features	\$250,700.00
o Diving Boards	\$28,000
o Double Slide	\$222,700
- Greenspace w/ Shade Structures	\$8,000.00
o Shade Structures	\$1,000 Ea.
o Sod	\$3,000

-	Parking & Drainage Improvements	\$379,400.00
	o Earthwork	\$45,200
	o 6" Concrete Paving	\$284,500
	o Remove Existing Parking	\$27,000
	o Storm Sewer Improvements	\$22,700
-	Seeding	\$22,800.00
	Construction Cost	\$2,918,630.00
	25% Engineering/Contingency	\$729,700.00
	<u>Total Construction Cost</u>	<u>\$3,648,330.00</u>

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PROJECT NO: 015-2112
DRAWN BY: BJF
DATE: MARCH 2016



CONCEPT "A" REMODELED POOL WITH NEW BATHHOUSE
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FIGURE
A



2. Concept "B"

Concept "B" consists of a new pool basin with the new bathhouse. The pool basin shown in this concept includes a zero entry entrance at the west end, the competitive lanes in the middle section running north and south, and separate slide and diving basins on the east end. Amenities for this concept includes 1 and 3 meter diving boards, double slide, 8-50 meter swim lanes, bridge structure, water cannons, roll-a-bar, water umbrella, water bubblers, and shade structures. Also shown in this concept but only as additional options are a small kiddie play area and a lily pad/log crossing. This concept includes removing and repaving the north and south parking areas as well as connecting the two parking areas along the west side with parking. By placing the bathhouse on the west end of the pool, the concession stand and parking could also be utilized by the ball fields. The cost of this concept can be seen below:

- New Pool Basin	\$2,141,300.00
o Concrete Basin	\$631,000
o 5" Concrete Deck	\$226,820
o Pumps, Piping, Filter	\$350,000
- New Bathhouse	\$657,250.00
- Mechanical Building	\$145,630.00
- Water Features w/ Shade Structures	\$343,200.00
o Shade Structures	\$1,000 Ea.
o Diving Boards	\$28,000
o Double Slide	\$222,700
o Bridge Structure	\$40,000
o Water Bubblers	\$400 Ea.
o Water Cannons	\$5,500 Ea.
o Water Umbrella	\$7,300
o Roll-A-Bar	\$5,000
- Parking & Drainage Improvements	\$460,350.00
o Earthwork	\$52,200
o 6" Concrete Paving	\$357,650
o Remove Existing Parking	\$27,000
o Storm Sewer Improvements	\$23,500
- Seeding	\$18,820.00
Construction Cost	\$3,766,550.00
25% Engineering/Contingency	\$941,640.00
<u>Total Construction Cost</u>	<u>\$4,708,190.00</u>

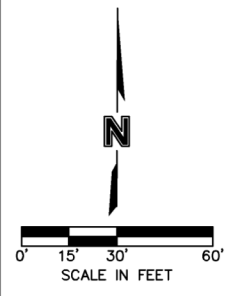
- Kiddie Play Area **\$60,000.00**
 - o Pumps, Piping \$40,000
 - o Concrete Basin \$10,000
 - o Water Features \$10,000
- Lily Pad/Log Crossing **\$60,000.00**

Construction Cost **\$120,000.00**

25% Engineering/Contingency **\$30,000.00**

Total Construction Cost **\$150,000.00**

Total Construction Cost w/ Kiddie Play Area and Crossing **\$4,858,190.00**



MAIN POOL AREA = 17,911 S.F.
DECK AREA = 25,202 S.F.
MAIN POOL VOLUME = 642,607 GAL.
REQUIRED FLOW RATE = 2,043 GPM

WEST 8TH STREET



OPTIONAL KIDDIE
PLAY AREA

OPTIONAL LILLY PAD/LOG
CROSSING

- 1 PARKING & DRAINAGE IMPROVEMENTS
- 2 WATER BUBBLERS
- 3 WATER UMBRELLA
- 4 ROLL-A-BAR
- 5 WATER CANNONS
- 6 BRIDGE STRUCTURE
- 7 DOUBLE SLIDE
- 8 1 METER & 3 METER DIVING BOARDS
- 9 SHADE STRUCTURE
- 10 NEW BATHHOUSE
- 11 MECHANICAL BUILDING

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CONCEPT "B" NEW POOL WITH NEW BATHHOUSE
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FIGURE
B

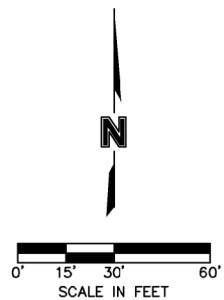
3. Concept "C"

Concept "C" is a "U" shaped basin with a separate lazy river feature. The pool basin consists of the zero entry facing east, swim lanes in the center running north and south, and the diving and slide basins along the west. This concept has 8-25 meter competitive swim lanes, lazy river, zero entry, water umbrella, water cannons, roll-a-bar, water bubblers, bridge structure, double slide, and 1 and 3 meter diving boards. This concept uses the new bathhouse option. This concept fits the site well but does impact the north parking area with the lazy river feature. Patrons using the north parking area will need to walk around the pool basin to access the bathhouse. The cost of Concept "C" can be seen below:

- New Pool Basin	\$1,754,050.00
o Concrete Basin	\$469,000
o 5" Concrete Deck	\$109,000
o Pumps, Piping, Filter	\$340,000
- New Bathhouse	\$657,250.00
- Pool Mechanical Building	\$145,630.00
- Pool Water Features w/ Shade Structures	\$338,200.00
o Shade Structures	\$1,000 Ea.
o Double Slide	\$222,700
o Diving Boards	\$28,000
o Bridge Structure	\$40,000
o Water Bubblers	\$400 Ea.
o Water Cannons	\$5,500 Ea.
o Water Umbrella	\$7,300
o Roll-A-Bar	\$5,000
- Parking & Drainage Improvements	\$379,300.00
o Earthwork	\$63,800
o 6" Concrete Paving	\$266,000
o Remove Existing Parking	\$27,000
o Storm Sewer Improvements	\$22,500
- Seeding	\$21,200.00
Construction Cost	\$3,295,630.00
25% Engineering/Contingency	\$823,900.00
<u>Total Pool Construction Cost</u>	<u>\$4,119,530.00</u>
- Lazy River w/ Shade Structures	\$662,200.00
o Shade Structures	\$1,000 Ea.

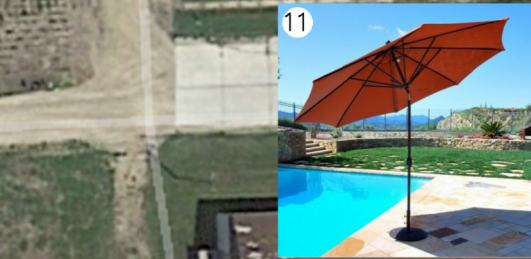
○ Pumps, Piping, Filter	\$232,770
○ Concrete Basin	\$279,500
○ 5" Concrete Deck	\$116,280
- Lazy River Water Features	\$60,000.00
○ Wall Sprays	\$680 Ea.
○ Water Jets	\$400 Ea.
○ Geysers	\$1,900 Ea.
○ Water Cannons	\$5,500 Ea.
- Lazy River Mechanical Building	\$85,000.00
Construction Cost	\$807,200.00
25% Engineering/Contingency	\$201,800.00
<u>Total Lazy River Construction Cost</u>	<u>\$1,009,000.00</u>
<u>Total Construction Costs w/ Lazy River Feature</u>	<u>\$5,128,530.00</u>

With this option, the existing bathhouse could be remodeled and used instead of the new bathhouse design. The cost of remodeling the existing bathhouse would be approximately \$503,500. If this route was chosen, there could be a savings of \$153,750 on the construction cost.



MAIN POOL AREA = 2,496 S.F.
MAIN POOL DECK AREA = 12,116 S.F.
MAIN POOL VOLUME = 433,400 GAL
MAIN POOL REQUIRED FLOW RATE = 1,694 GPM
LAZY RIVER AREA = 5,142 S.F.
LAZY RIVER DECK AREA = 12,920 S.F.
LAZY RIVER VOLUME = 113,873 GAL
LAZY RIVER REQUIRED FLOW RATE = 643 GPM

WEST 8TH STREET



- 1 PARKING & DRAINAGE IMPROVEMENTS
- 2 WATER BUBBLERS
- 3 WATER UMBRELLA
- 4 ROLL-A-BAR
- 5 WATER CANNONS
- 6 BRIDGE STRUCTURE
- 7 DOUBLE SLIDE
- 8 1 METER & 3 METER DIVING BOARDS
- 9 NEW BATHHOUSE
- 10 MAIN POOL MECHANICAL BUILDING
- 11 SHADE STRUCTURES
- 12 LAZY RIVER
- 13 LAZY RIVER MECHANICAL BUILDING

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CONCEPT "C" NEW POOL WITH NEW BATHHOUSE
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FIGURE
C

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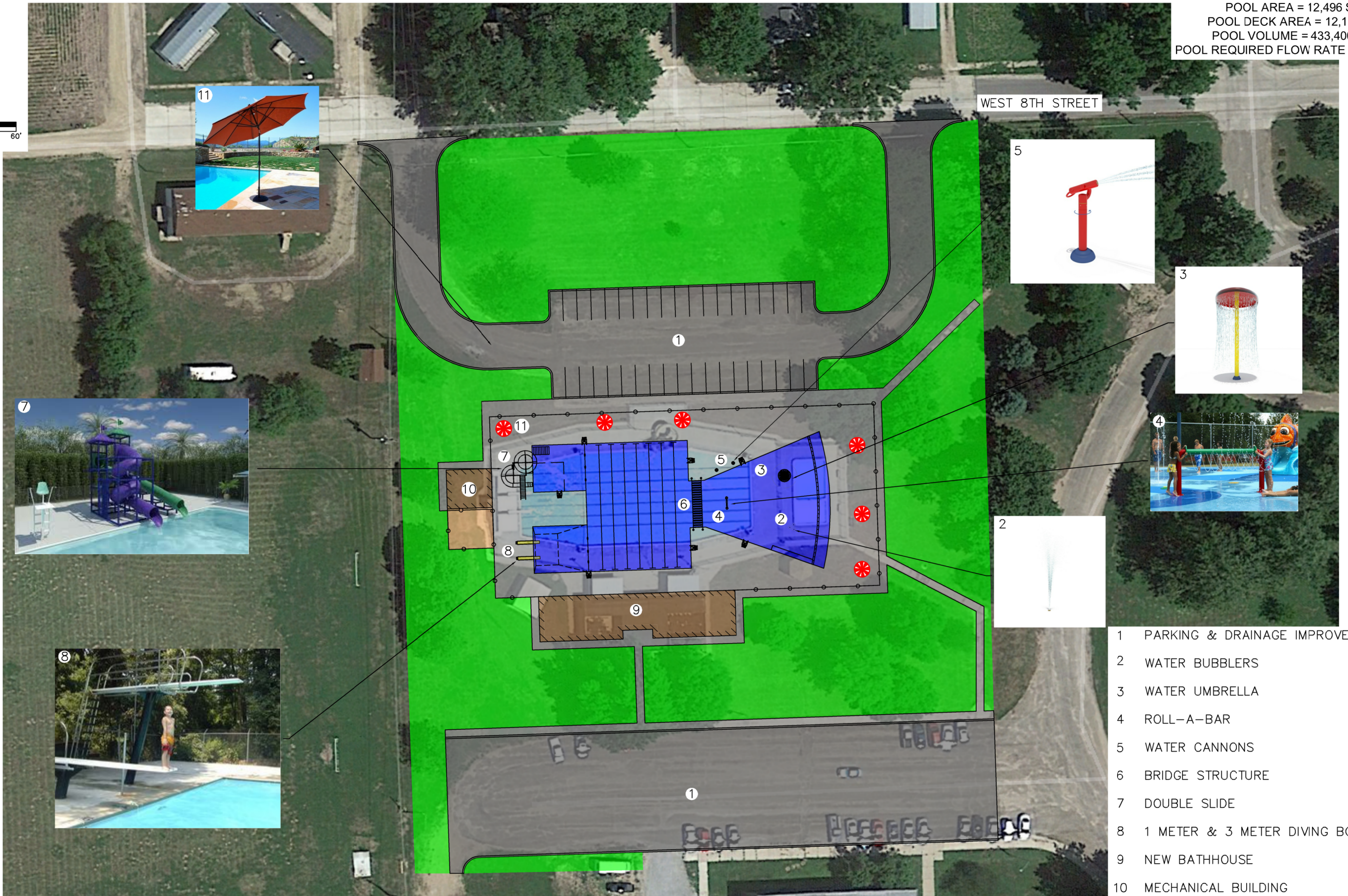
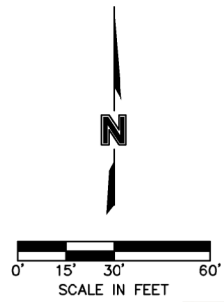


CONCEPT "C-1" NEW POOL WITH NEW BATHHOUSE
FAIRBURY, NEBRASKA

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FIGURE
4

POOL AREA = 12,496 S.F.
POOL DECK AREA = 12,116 S.F.
POOL VOLUME = 433,400 GAL
POOL REQUIRED FLOW RATE = 1,694 GPM



- 1 PARKING & DRAINAGE IMPROVEMENTS
- 2 WATER BUBBLERS
- 3 WATER UMBRELLA
- 4 ROLL-A-BAR
- 5 WATER CANNONS
- 6 BRIDGE STRUCTURE
- 7 DOUBLE SLIDE
- 8 1 METER & 3 METER DIVING BOARDS
- 9 NEW BATHHOUSE
- 10 MECHANICAL BUILDING
- 11 SHADE STRUCTURES

Funding Options

Funding options for Municipal Parks and Pools have typically been difficult to obtain. Only recently has funding opportunities opened up for qualifying Communities. A summary of funding opportunities are as follows:

Park & Pool Funding

1. CDBG

The Community Development Block Grant (CDBG) can be utilized in eligible communities for eligible projects. CDBG funds are administered by the Nebraska Department of Economic Development (NDED) and are federal funds allocated from Housing and Urban Development (HUD). Fairbury is currently 47.74% LMI based on the census survey data and needs be at 51% or greater LMI to be eligible for projects. A community wide income survey can be completed in order to establish eligibility. CDBG is a competitive grant with an annual cycle, it may be difficult to have a competitive application with park improvements being the primary focus. Maximum CDBG award is \$250,000 with a required 25% match. The City should look at the priorities and estimated users in order to best utilize CDBG funds. Establishment and identification of need is the most important part of a CDBG application, and recreational project will be measured against all other public needs. NDED should be consulted prior to any grant application, to determine project eligibility. Federal funds come with various requirements and mandates that may increase project cost, scope of work, or timeline.

2. LWCF

The Land and Water Conservation Fund (LWCF) is a competitive matching grant offered periodically. LWCF is administered by Nebraska Game and Parks Commission (NGPC) and are federal funds allocated from the National Parks Service (NPS). These federal funds are available for municipal owned outdoor recreation projects. The Statewide Comprehensive Outdoor Recreational Plan (SCORP) identifies priority project for the NGPC for a given timeframe. Fairbury could utilize this funding source for priority projects in the park area. The funding amount is not set but a 50% match is required and grant awards are typically less than \$200,000. NGPC should be consulted prior to any grant application to determine project eligibility. Federal funds come with various requirements and mandates that may increase project cost, scope of work, or timeline.

3. CCCFF

The Community Civic Center Financing Fund (CCCFF) is state funds awarded annually through a competitive grant cycle. CCCFF funds are administered by the Nebraska Department of Economic Development (NDED) and are state funds allocated through the Nebraska Legislature. Recreational Centers and sports fields have been established as eligible projects. Swimming pool repairs, swimming pools as a standalone project, and trail projects may not be eligible for CCCFF grants. Once an eligible recreational project is identified Fairbury could be eligible for \$375,000 with a 50% matching grant requirement. NDED should be consulted prior to any grant application, to determine project eligibility.

4. CDA

The Community Development Assistance Act (CDA) was created in 1985 by the Nebraska Legislature to encourage private investment to financially support nonprofit community betterment organizations in an effort to implement community service and development projects in chronic, economically distressed areas. A community betterment organization may apply to the Nebraska Department of Economic Development (DED), to qualify for awarding tax credits to eligible contributors. Upon the department's approval of a project, the nonprofit organization can award state tax credits of up to 40 percent of the value of a contribution to eligible businesses, corporations, insurance firms, financial institutions, or individuals.

5. Foundation Funding

There are a number of private foundations throughout Nebraska that could be utilized for various park and recreational project funding. Based on the project type, user groups and project, different foundations may be utilized. NDED provides a list of Nebraska Foundation that may be solicited for project funds. One possible foundation is the Peter Kiewit Foundation. Foundations should be contracted directly to determine funding available and project eligibility.

Trail Funding

1. RTP

The Recreational Trails Program (RTP) is a competitive grant offered annually. RTP is funded by the Federal Highway Administration (FHWA) and administered by the Nebraska Game and Parks Commission. Federal assistance up to 80% from the RTP is allowed to match a project's cost or up to \$250,000. NGPC should be consulted prior to any grant application to determine project eligibility. Federal funds come with various requirements and mandates that may increase project cost, scope of work, or timeline.

2. TAP

Transportation Alternatives Program is a competitive grant offered periodically. TAP is funded by Federal Highway Administration (FHWA) and administered by the Nebraska Department of Roads (NDOR). Federal assistance up to 80% for TAP is allowed to match a project's cost. Project may include trail development and sidewalk improvements depending on the nature of the project. NDOR should be consulted prior to any grant application to determine project eligibility. Federal funds come with various requirements and mandates that may increase project cost, scope of work, or timeline.

These funds are all great potential opportunities for the City of Fairbury to consider as you complete the planning on the Park and Pool needs of the Community. Olsson has staff knowledgeable in applying for these funds and would be a great resource for the City of Fairbury to use to put this study into action.



Appendices

- A. Acknowledgments
- B. Pool Facility Evaluation
- C. Available Water Features
- D. Geotechnical Report
- E. Preliminary Drainage Study

Appendix A

ACKNOWLEDGMENTS

Mayor

- Homer Ward

City Council

- Ed Friesen, Chair
- Roger Bailey
- Doug Brown
- Rick Carmichael
- Kelly Davis
- Brad Kuzelka
- Tim Polson
- Phil Rogge

Pool & Aquatic Committee

- Brad Kuzelka, Chair
- Barb Bedlan
- Craig Bontrager
- Jake Friesen
- Mary Mach
- Valerie Snyder
- Crystal Stall

City Staff

- Collin Bielser, City Administrator
- Mick Hynek, Street Superintendent
- Laura Bedlan, Zoning Administrator

Community Organizations

- Blue Rivers Area Agency on Aging
- Fairbury Baseball/Softball Association
- Fairbury Fun Park Committee
- Fairbury Hoops
- Fairbury Master Gardeners
- Fairbury Optimist Club
- Fairbury Soccer Association
- Fairbury Swim Team
- Fairbury Tree Board
- Pioneer Shrine Club

Appendix B

SWIMMING POOL FACILITY EVALUATION FORM

Owner: City of Fairbury Project No.: 2015-2112 Date: July 30th 2015
Facility Name: Municipal Pool Facility Location: Fairbury, Nebraska
Facility Address: Fairbury City Park County: Jefferson
Record Plans Received: 1952/1990 Pictures Taken: yes
Other Documents Received:

History:

Pool Built: 1953 Bathhouse Built: 1953 Pool Renovated: 1990

Bathhouse Renovated:

Pool No. 1 Description: Main Pool 3'-12' deep No. 2 Description: Kiddie Pool 2' deep

No.3 Description: Baby Pool 1' deep

Building No. 1 Description:

No. 2 Description:

Do Pools Leak Water: Main Pool Amount:

Reported Location of Leaks: Main drain basin/electrical boxes/joints

Subsurface Conditions:

Open Water in close Proximity: none

High Ground Water: see geotech report

Ratings:

1 = Least, Worst or Lowest

5 = Most, Best or Highest

1.1 Pool Basin

Indoor: ☐ Outdoor: ☐ Shape: Rectangular ☐ T ☐ L ☐

Free Form:

Current Pool Uses: Recreation ☐ Wellness ☐ Education ☐ Competition ☐

Pool Basin Type: Combination ☐ Rec Only ☐ Wellness Only ☐ Diving Only ☐

Pool Basin Activities

Competitive Features:

25-Yard Lanes ☐ 25-Meter Lanes ☐ Water Depth Less than 3' ☐ Zero Depth ☐

50-Yard Lanes ☐ 50-Meter Lanes ☐

Recreation Features:

Waterslide ☐ Diving ☐ Receiving Area ☐ Lazy River ☐ Special ☐

Basin Construction/Condition:

Floor Constructed of: Concrete ☐ Aluminum ☐ Steel ☐ Fiberglass ☐

Floor Cracking:

Shallow Area: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ Describe hairline cracking

Medium Area: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ Describe hairline cracking

Diving Hopper: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ Describe hairline cracking

Is Floor Repairable: Could reseal joints to help

Walls:

Wall Constructed of: Cast Concrete ☐ Gunite ☐ Aluminum ☐ Fiberglass ☐

Steel ☐ Masonry ☐

Condition: Rebar Exposed **no**

Disjointed Walls

Walls Straight **yes**

Evidence of Structural Failure **no**

Structural Cracks **small hairline cracks**

Wall and Floor Separate **yes**

Wall and Fillet Separate **no**

Are Walls Repairable **yes**

Expansion-Contraction Joints:

In Floor ☐ Up Walls ☐ At Intersection of Walls w/Floor ☐ At Breakline ☐ In DH ☐

Joint Conditions: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ N/A ☐

Original Waterproofing of Joints: Sealant ☐ Waterstop ☐ Unknown ☐

Waterstop: Present in Joints ☐ Unknown ☐ Shown on Plans ☐

Recirculation Type: Conventional ☐ Reverse ☐ Mixed ☐

Outlet System Type: Skimmer Pool ☐ Gutter Pool ☐

Pool Gutter:

Type: Roll Out ☐ Amityville ☐ Curb with Gutter ☐

Manufactured Gutter Inserted into Cast Pool Wall ☐

Constructed of: Gunite/Ceramic Tile Gutter ☐ Cast Concrete ☐ Masonry Units ☐

Stainless Steel ☐ Assembly ☐ Pre-Cast Concrete ☐ Aluminum Pool Gutter ☐

Steel Pool Gutter ☐ PVC Gutter Assembly ☐

Pool Gutter is Level **no** if no, Approximate Difference **approx. 1/2"**

Comments:

1.2 Pool Basin Finish

Pool Finished: Paint ☐ Plaster ☐ Ceramic Tile ☐ Unfinished ☐

Condition: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Paint: Heavy Build Up **minor**

Abrasion Blasting Required

Signage on Deck **yes**

Type: Paint ☐ Tile ☐

Depth Marking **yes**

Size of Numbers **6"**

Meet Code Distance of 24' apart **yes**

In Corners **no**

Changes in Pool Floor Depth **yes**

No Diving **no**

Size of Letters **n/a**

Meet Code Distance of 42' O.C. **n/a**

Signage in Pool **yes**

Type: Paint ☐ Tile ☐

Depth Marking **yes**

Size of Numbers **6"**

Meet Code Distance **yes**

In Corners **no**

Changes in Pool Floor Depth **yes**

Contracting Color Line at Breakline **yes**

At Stop Threads

Competition Lane Lines **yes**

Of: Paint ☐ Tile ☐ Meet Standards

Comments:

1.3 Security Fence

Exterior Perimeter Enclosure: Height **6'**

4" Gaps Under Enclosure **no**

4" Gaps at Ends **no**

North-east Corner of Bathhouse Type: Chain Link ☐ Ornamental ☐ Other ☐

For Chain Link: Safety Woven ☐ Top Bar ☐ Barb Wire ☐

For Ornamental: Gap Width between Bars or Pickets **n/a**

Gate(s) **walk** Number of Gates **1 (2 if count into main pool)** 4" Gaps in Gates **no**

Emergency Exits **n/a**

Interior: Height **4'** 4" Gaps Under Enclosure **no**

4" Gaps at Ends **no**

Type: Chain Link ☐ Ornamental ☐ Other ☐

For Chain Link: Safety Woven ☐ Top Bar ☐ Barb Wire ☐

For Ornamental: Gap Width between Bars or Pickets **n/a**

Gate(s) **walk** Number of Gates **3 exterior including 1 in babypool area** 4" Gaps in Gates **no**

Emergency Exits **no**

Concession Area Fence	Height	Location	Dimensions
6'	ft. X	ft.	

Are Interior Gates Self Closing **no**

Comments:

1.4 Pool Vacuum System

Pool Vacuum Observed **yes** Brand **Harmsco** Model **Better Filter 155 SC**

Type: Central w/Wall Fittings ☐ Skimmer Type ☐ Portable ☐ Robot ☐ **secondary**

For Portable: Discharge Type: W/Filter Back to Pool ☐ WO/Filter to Gutter System ☐

Powered by: Gas Engine ☐ Electric Motor ☐ GFIC Protection ☐

For Robot: Air Sensor ☐ Remote Control ☐

Comments:

1.5 Pool Decking

Type: Unfinished Concrete ☐ Decorative Concrete ☐ Other ☐

Slope Away from Pool **yes** Slope to Deck Drains **yes**

Slope to Grade **no** Min Width **14' to fence**

Shade Structure of Pool No. 2 and Pool No.3

Cracking: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Obstructions within 5' of Pool **no** Ramps **no** Meet ADA **no**

Comments: **no shade structure**

1.6 Deck Drain

Deck Drains **20** Air Gap **yes** Discharges to: Storm ☐ Sanitary ☐

Location of Drains **4' from pool edge**

Comments:

1.7 Deck Equipment

Number of Units: **3 (2 boards, 1 slide)**

2- Meter Diving Boards **no**

Portable Lifeguard Chair **no**

Stair Case into Pool **no**

1-Meter Diving Boards **2**

Stationary Lifeguard Chair **4**

Deck Pool Slide **1**

Deck Level Tower **no**

Pool Ladder **6**

ADA Lifts **yes (upon request)**

Diving Boards:

Style: Single Pedestal ☐ 4 Leg ☐ Site Built ☐ Broken Fitting

Brand **n/a** Overall Condition: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Concrete Footings **yes (bolted)** Length of Board **14'**

Other

Diving Board: 2 METER **n/a**

Distance End of Board Vertical Down to Diving Hopper Fillet

Distance Board above Water

Distance Board Extends over Diving Hopper Wall

Distance from Tower to Side Wall

Distance to Another Tower

Handrails Present

Handrails to Inside Pool Wall

Replace

Diving Board: 1 METER:

Distance End of Board Vertical Down to Diving Hopper Fillet **9.5'** or Floor **15'**

Distance Board Above Water **3'** Distance Board Extends over Diving Hopper Wall **5'**

Distance from Tower to Side Wall **1'**

Distance to Another Diving Tower **12'**

Handrails Present **yes**

Handrails to Inside Pool Wall **yes**

Replace

Lifeguard Chairs:

Style: Single Pedestal ☐ 4 Leg ☐ Site Built ☐ Broken Fittings

Brand **Paragon** Overall Conditions: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Umbrellas **available** Fiberglass Seats ☐ Wood Seats ☐ Meet OSHA **yes**

All Appear to Have Concrete Footings **bolted to deck** Replace Choose an item.

Pool Ladders:

Style: Stainless Steel ☐ Other ☐ Type: Overhand ☐ Flush ☐ Cross Braced

Broken Fittings Overall Conditions: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Brand **n/a** Replace

ADA Access **yes** Type: Lift ☐ Ramp ☐ Chair ☐ Zero Depth Wheel Chair ☐

Comments: **lift is available upon request, ladder steps are plastic**

1.8 Surge Capacity

Surge Capacity Present Choose an item. Type: Tank ☐ In Gutter ☐ Other ☐

Serves Pool No. 1 ☐ Serves Pool No. 2 ☐ Serves Pool No. 3 ☐

Location Click here to enter text. Condition: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Size: From Plans = Click here to enter text.gallons

From Field Measurements = L Click here to enter text. x W Click here to enter text. = Gallons Click here to enter text.

Reuse Choose an item. Flood Pumps/Basement Possible Choose an item. N/A ☐

Automatic Fill Valve Choose an item. Type Click here to enter text. 6" Air Gap Choose an item.

Cross Connection: 6" Air Gap on Fill Choose an item. 6" Air Gap on Drain Choose an item.

Comments: Click here to enter text.

1.9 Main Pool Piping

Conventional Flow ☐ Reverse Flow ☐ Combination ☐ Original System Choose an item.

Main Drain: Number **1** Size _____ x _____
 ½" Maximum Opening Description _____
 Main Drain Pipe Dia. Constructed of PVC ☐ Metal ☐
 Return Inlets: In Wall ☐ In Floor ☐ Floor Trench Inlet ☐ Part of Manufactured Gutter ☐
 Spacing Per Code Directional Adjustable Metallic ☐ No.
 Inlets
 Return Pipe Dia. Constructed of: PVC ☐ Metal ☐
 Outlet System: Gutter Skimmer
 Outlet Pipe Dia. Constructed of: PVC ☐ Metal ☐
 For Gutter Pool: No. of Drains "L" Type ☐ Flat Type ☐
 Location of Drains
 For Skimmer Pool: Number Skimmers Constructed of: PVC ☐ Metal ☐
 Comments:

1.10 Filtration Type

Brand _____ Model No. _____ No. Units _____
 Type: Pressure Sand ☐ Vacuum Sand ☐ Gravity Sand ☐ Other Sand ☐
 Pressure DE ☐ Vacuum DE ☐ Bump DE ☐ Cartridge ☐
 Tank Material: Steel ☐ Fiberglass ☐ Aluminum ☐ Concrete ☐ Other ☐
 Serves Pool No. 1 ☐ Serves Pool No. 2 ☐ Serves Pool No. 3 ☐ Reuse Filter
 For Sand: High Rate ☐ Rapid Rate ☐ Dia. _____ or L **7.5'** W **8.25' each (4 total)**
 = Area **61.875 each (247.5 total)** s.f.
 For DE: No. Septums _____ Dia. _____ or L _____ x W _____
 = Area _____ s.f.
 For Cartridge: No. Cartridges _____ Dia. _____ or L _____ x W _____
 = Area _____ s.f.
 Hydraulic Capacity: From Data Plate _____ : Loading of _____ gpm/s.f. Flow of _____
 gpm
 From Calculations _____ : Loading of _____ gpm/s.f. x area _____ s.f.
 = Flow of _____ gpm
 Supply Piping: Manifold _____ Each Filter Lateral _____
 Independently Valved
 Manifold Piping D.I. ☐ Valves: Gate ☐ Butterfly ☐
 Backwash: Individually ☐ Group ☐ Backwash Pipe Size _____
 Air Gap _____ Sight Glass _____
 Backwash flow to: Storm ☐ Sanitary ☐ To Grade ☐
 Comments:

1.11 Recirculation Pump Assembly No. 1

Pump Brand **AP Aurora Pentair Pump Group** Model No. **02-474572-2** No. Units **2**
 Type: End Suction Centrifugal ☐ Split Case Centrifugal ☐ Vertical Turbine ☐ **RPM = 1750**
 Long Coupled ☐ Short Coupled ☐ Serves Main Pool ☐ Serves Baby Pool ☐ **Type = 341A-BF**
 Serves Kiddie Pool ☐ **Size = 6x6x12B**
 Capacity: From Data Plate _____ gpm @ _____ ft. TDH From Plans
 gpm @ _____ ft. TDH
 Pump Housing Suction Size **8"** Pump Housing Discharge Size **6"**
 Pump Reusable **yes** Data Plate Located **on pump motor**

Pump Suction Pipe Commences: At Surge Tank ☐ Direct from Main Drains ☐ At Filter ☐

Suction Pipe Size **8"** Pipe Type: D.I. ☐ PVC ☐ Flooded Suction

Hair and Lint Strainer Brand Size Model No.

Reuse Strainer Isolation Valve(s) for Strainer

Discharge Pipe Size **6"** Pipe Type: D.I. ☐ PVC ☐

Flow Meter **1** Brand **Water Specialties Propeller Meter** Model No. **20121240-06**

Pump Motor: Brand Model No. HP

Phase Voltage Amps

RPM Type Frame

ID No.

Starter Provided Model No.

Comments:

1.12 Disinfectant Type No. 1

Chlorinator Brand **Rainbow Lifeguard** Model No. **HC-3340** No. Units **1 (1" tablets)**

Maximum Output in gpd **4.5 lb/hr** in pph

Location **Outside west side of pool in locked building**

Serves Pool No. 1 ☐ Serves Pool No. 2 ☐ Serves Pool No. 3 ☐

Form of Disinfectant: Gas ☐ Liquid ☐ Solid ☐ Type: Chlorine ☐ Bromine ☐

Specific Type Chemical Used

Method of Operation: Vacuum ☐ Manual Control ☐ Automatic Control ☐

Point of Injection Downstream of: Pump ☐ Heater ☐ Filter ☐

Method of Inducing Flow Through Chlorinator:

Internal Pump ☐ Bypass Valve in Return ☐ Public Water ☐ Booster Pump ☐

For Booster Pump: Brand Model No.

Hp Volt Phase ☐

Does Method of Inducing Flow Result in Direction Cross Connection

Chemical Operation

pH Balancing System: **yes, ash** If Yes, then Manual Control ☐ Automatic Control ☐

Brand Model No. No. Units

Maximum Output in gpd in pph

Location

Serves Main Pool ☐ Serves Baby Pool ☐ Serves Kiddie Pool ☐

pH Form: Gas ☐ Liquid ☐ Slurry ☐ Type: Soda Ash ☐ Co2 ☐ Muratic Acid ☐

Specific Type Chemical Used

Separate Chemical Room **yes, east side of bath house**

Serves: Main Pool ☐ Baby Pool ☐ Kiddie Pool ☐

Location of Chlorine Room(s) **west side of filter house**

Room Sealed **yes** Closed Ceiling **yes** Open Ceiling **only vent**

Constructed of: Masonry Walls ☐ Wood Frame Walls ☐

Chlorine Room has: Out Swing Door **yes** Vent **yes, ceiling** Window **no**

Chlorine Alarm **no** Outside Light Switch **no** Safety Mask **yes**

Outside Ventilation Switch **no**

Light Operational **no** Ventilator Operational **yes**

For Gas: Cylinder Chain
Describe any Chemicals Present
Comments:

Cylinder Scales

1.13 Chemical Controller and Sampling Pump

Chemical Controller Serves Main Pool ☐ Serves Baby Pool ☐ Serves Kiddie Pool ☐
W/Recorder W/Sampling Pump
Controller Brand Model No. No. of Units
Serial No.
Recorder Brand Model No. No of Units Serial
No.
Sampling Pump Brand Model No.
Hp Voltage
Comments:

1.14 Pool Heater

Pool Heater Serves Main Pool ☐ Serves Baby Pool ☐ Serves Kiddie Pool ☐
Type: Standard Pool Heater Central Boiler w/Heat Exchanger
Solar Collector ☐ Heat Pump ☐ Other ☐ Hot Water ☐ Steam ☐
State Boiler No.
Standard Pool Heater Brand Model No.
No. of Units Serial No. Input BTU/Hr Output
BTU/Hr
From Data Plate on Unit Gas Feed Regulator before Appliance
Temp/Pressure Relief Valve 6" Air Gap on Blow Off
Water Supply Water Return Metal Pipe
Energy Type: Electric ☐ Gas ☐ If Gas then: Natural Gas ☐ LPG ☐
Vent Size Forced Draft Common Chimney Size
Combustion Air Source 50% High 50% Low Motorized
Expansion Tank Brand Size gallons
Central Boiler w/Heat Exchanger: Serves Main Pool ☐ Serves Baby Pool ☐ Serves Kiddie Pool ☐
Boiler Brand Model No. No. of Units
Burner Brand Model No. No. of Units
Firing Data Setting Voltage
Amperage Phase
Method of Inducing Flow: Recirculate Pump Bypass Valve
Recirculate Pump: Brand Model No. No. of Units
Flow gpm from Data Plate
Motor Brand H.P. Phase
Voltage Amperage
Comments:

1.15 Baby Pool

Indoor ☐ Outdoor ☐ Shape: Rectangular ☐ T ☐ L ☐ Free Form ☐ Trapezoidal ☐

Pool Uses: Recreation ☐ Wellness ☐ Education ☐ Competition ☐

Pool Vessel Type: Combination ☐ Rec Only ☐ Wellness Only ☐ Diving Only ☐

Pool Vessel Features

25-Yard Lanes ☐ 25-Meter Lanes ☐ Water Depth Less than 3' ☐ Zero Depth ☐

50-Yard Lanes ☐ 50-Meter Lanes ☐ Waterslide Receiving Area ☐ Lazy River ☐

Special ☐

Floor: **concrete**

Constructed of: Concrete ☐ Aluminum ☐ Steel ☐ Fiberglass ☐

Random Cracking in:

Shallow Area: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Medium Area: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Diving Hopper: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Is Floor Repairable ☐ Comments ☐

Walls:

Constructed of: Cast Concrete ☐ Gunite ☐ Aluminum ☐ Steel ☐ Fiberglass ☐

Masonry ☐

Condition: Rebar Exposed **no**

Disjointed Walls

Walls Straight **yes**

Evidence of Structural Failure **no**

Structural Cracks **slight hairline cracking**

Wall and Floor Separate **yes**

Wall and Fillet Separate

Are Walls Repairable **yes**

Expansion-Contraction Joints: **none**

In Floor ☐ Up Walls ☐ At Intersection of Walls w/Floors ☐ At Breakline ☐ In DH ☐

Joint Condition: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ N/A ☐

Original Waterproofing of Joints: Sealant ☐ Waterstop ☐ Unknown ☐

Waterstop: Present in Joints ☐ Unknown ☐ Shown on Plans ☐ **where cracking has sealant**

Recirculation Type: Conventional ☐ Reverse ☐ Mixed ☐

Outlet System Type: Skimmer Pool ☐ Gutter Pool ☐ **mushroom riser**

For Gutter Pool:

Type: Roll Out ☐ Amityville ☐ Curb with Gutter ☐

Manufactured Gutter Inserted into Case/Gunite Pool Wall

Constructed of: Gunite/Ceramic Tile Gutter ☐ Cast Concrete ☐ Masonry Units ☐ Stainless Steel ☐ Assembly ☐ Pre-

Cast Concrete ☐ Aluminum Pool Gutter ☐ Steel Pool Gutter ☐

PVC Gutter Assembly ☐

Pool Gutter is Level ☐ if No, Approximate Difference ☐

Comments: ☐

1.16 Kiddie Pool

Indoor ☐ Outdoor ☐ Shape: Rectangular ☐ T ☐ L ☐ Free Form ☐ Trapezoidal ☐

Pool Uses: Recreation ☐ Wellness ☐ Education ☐ Competition ☐

Pool Vessel Type: Combination ☐ Rec Only ☐ Wellness Only ☐ Diving Only ☐

Pool Vessel Features:

25-Yard Lanes ☐ 25-Meter Lanes ☐ Water Depth Less than 3' ☐ Zero Depth ☐
50-Yard Lanes ☐ 50-Meter Lanes ☐ Waterslide Receiving Area ☐ Lazy River ☐ Special ☐

Floor: **concrete**

Constructed of: Concrete ☐ Aluminum ☐ Steel ☐ Fiberglass ☐

Random Cracking in:

Shallow Area: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Medium Area: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Diving Hopper: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Is Floor Repairable **yes** Comments **hairline cracking**

Walls: Choose an item.

Constructed of: Cast Concrete ☐ Gunitite ☐ Aluminum ☐ Steel ☐ Fiberglass ☐

Masonry ☐

Condition: Rebar Exposed **no** Disjointed Walls Walls Straight **yes**

Evidence of Structural Failure **no** Structural Cracks **no**

Wall and Floor Separate **yes** Wall and Fillet Separate

Are Walls Repairable **yes**

Expansion-Contraction Joints:

In Floor ☐ Up Walls ☐ At Intersection of Walls w/Floors ☐ At Breakline ☐ In DH ☐

Joint Condition: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ N/A ☐

Original Waterproofing of Joints: Sealant ☐ Waterstop ☐ Unknown ☐

Waterstop: Present in Joints ☐ Unkonwn ☐ Shown on Plans ☐

Recirculation Type: Conventional ☐ Reverse ☐ Mixed ☐

Outlet System Type: Skimmer Pool ☐ Gutter Pool ☐

For Gutter Pool: **n/a**

Type: Roll Out ☐ Amityville ☐ Curb with Gutter ☐

Manufactured gutter inserted into Case/Gunitite Pool Wall:

Constructed of: Gunitite/Ceramic Tile Gutter ☐ Cast Concrete ☐ Masonry Units ☐ Stainless Steel ☐ Assembly ☐ Pre-

Cast Concrete ☐ Aluminum Pool Gutter ☐ Steel Pool Gutter ☐

PVC Gutter Assembly ☐

Pool Gutter is Level if No, Approximate Difference

Comments:

1.17 Baby Pool Piping

Conventional Flow ☐ Reverse Flow ☐ Combination ☐ Original System **mushroom riser**

Main Drain: Number **1** Size x

½" Maximum Opening **yes** Main Drain Pipe Dia.

Constructed of: PVC ☐ Metal ☐

Return: Inlets: In Wall ☐ In Floor ☐ Floor Trench Inlet ☐ Part of Manufactured Gutter ☐

Spacing Per Code ☐ Directional ☐ Adjustable ☐ PVC ☐ Metallic ☐

Return Pipe Dia. Constructed of: PVC ☐ Metal ☐

Outlet System: Gutter Skimmer

Outlet Pipe Dia. **4"** Constructed of: PVC ☐ Metal ☐

For Gutter Pool: No. of Drains "L" Type Flat Type
 Location of Drains
 For Skimmer Pool: Number of Grates Constructed of: PVC ☐ Metal ☐

1.18 Kiddie Pool Piping

Conventional Flow ☐ Reverse flow ☐ Combination ☐ Original System no flow

Main Drain: Number 1 Size: x
 $\frac{1}{2}$ " Maximum Opening: Main Drain Pipe Dia. Constructed of: PVC ☐
 Metal ☐

Return: Inlets: In Toys ☐ In Wall ☐ In Floor ☐ Floor Trench Inlet ☐ Part of Manufactured Gutter ☐ Spacing Per code
☐ Directional ☐ Adjustable ☐ PVC ☐ Metallic ☐

Inlet in Toys mushroom riser

Return Pipe Dia. Constructed of: PVC ☐ Metal ☐

Outlet System: Gutter Skimmer
Constructed of: PVC ☐ Metal ☐
 Outlet Pipe Dia.

For Gutter Pool: No. of Drains "L" Type Flat Type
 Location of Drains:

For Skimmer Pool: No. of Grates Constructed of: PVC ☐ Metal ☐

Comments:

Baby Pool Filtration

Brand Model No. No. of Units

Type: Pressure Sand ☐ Vacuum Sand ☐ Gravity Sand ☐ Other Sand ☐
 Pressure DE ☐ Vacuum DE ☐ Bump DE ☐ Cartridge ☐ Other ☐

Tank Material: Steel ☐ Fiberglass ☐ S.S. ☐ Aluminum ☐ Concrete ☐ Other ☐

Serves Pool No. 1 ☐ Serves Pool No. 2 ☐ Serves Pool No. 3 ☐ Reuse Filter

For Sand: High Rate ☐ Rapid Rate ☐ Dia. or L x W
 = Area s.f.

For DE: No. Septums Dia. L x W
 = Area s.f.

For Cartridge: No. Cartridges Dia. L x W
 = Area s.f.

Hydraulic Capacity: From Data Plate: Loading of gpm/sf Flow of

From Calculations Loading of gpm/sf x area sf =
 Flow of gpm

Supply Piping: Manifold " Each Filter Lateral " Independently Valved
 Manifold Piping: D.I. ☐ PVC ☐ Valves: Gate ☐ Butterfly ☐

Backwash: Individually ☐ Group ☐ Backwash Pipe Size " Air Gap ☐ Sight Glass ☐

Backwash Flow to: Storm ☐ Sanitary ☐ To Grade ☐

Comments:

1.19 Recirculation Pump Assembly No. 2

Pump Brand Model No. No. of Units

Type: End Suction Centrifugal ☐ Split Case Centrifugal ☐ Vertical Turbine ☐ Long Coupled ☐ Short Coupled ☐

Serves Main Pool ☐ Serves Baby Pool ☐ Serves Kiddie Pool ☐

Capacity: From Data Plate _____ gpm @ _____ ft. TDH From Plans
 gpm @ _____ ft. TDH
 Pump Housing Suction Size _____ " Pump Housing Discharge Size _____ "
 Pump Reusable _____ Data Plate Located _____
 Pump Suction Pipe Commences: At Surge Tank ☐ Direct from Main Drains ☐ At Filter ☐
 Suction Pipe Size _____ " Pipe Type: D.I. ☐ PVC ☐ Flooded Suction ☐
 Hair and Lint Strainer _____ Brand _____ Size _____ Model No. _____

Reuse Strainer _____ Isolation Valve(s) for Strainer _____
 Discharge Pipe Size _____ " Pipe Type: D.I. ☐ PVC ☐
 Flow Meter _____ Brand _____ Model No. _____

Pump Motor:
 Brand _____ Model No. _____ HP _____
 Phase _____ Voltage _____ Amps _____ RPM _____
 Type _____ Frame _____
 Starter Provided _____ Model No. _____
 Comments: _____

1.20 Disinfectant System

Chlorinator Brand _____ Model No. _____ No. of Units _____
 Maximum Output _____ in gpd _____ in ppd Location _____
 Main Pool ☐ Baby Pool ☐ Kiddie Pool ☐

Appendix C

PRODUCT INDEX



\$3,690

ACTIVATOR N°1

VOR - 0612

DIMENSIONS
39 x 17 x 11 IN
99 x 43 x 28 CM

PRESSURE
-

FLOW
-

SMARTFLOW
-

BAY
-

COLORS
VORTEX COLOR CHOICES



\$3,690

ACTIVATOR N°2

VOR - 0613

DIMENSIONS
39 x 17 x 11 IN
99 x 43 x 28 CM

PRESSURE
-

FLOW
-

SMARTFLOW
-

BAY
-

COLORS
VORTEX COLOR CHOICES



\$4,600

ANGLED TWISTER

VOR - 0535

DIMENSIONS
51 x 14 x 35 IN
129 x 36 x 89 CM

PRESSURE
10-15 PSI
0.7-1.0 BAR

FLOW
8-10 GPM
30-38 LPM

SMARTFLOW
2-7 GPM
8-26 LPM

BAY
TEEN

COLORS
VORTEX COLOR CHOICES



\$2,700

AQUADOME N°1

VOR - 0555

DIMENSIONS
45 x 14 x 14 IN
114 x 36 x 36 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
10-18 GPM
38-68 LPM

SMARTFLOW
-

BAY
TODDLER

COLORS
VORTEX COLOR CHOICES



\$3,100

AQUADOME N°2

VOR - 7530

DIMENSIONS
72 x 14 x 14 IN
183 x 36 x 36 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
10-18 GPM
38-68 LPM

SMARTFLOW
-

BAY
TODDLER & FAMILY

COLORS
VORTEX COLOR CHOICES



\$3,500

AQUALIEN FLOWER N°1

VOR - 7388

DIMENSIONS
98 x 30 x 30 IN
249 x 76 x 76 CM

PRESSURE
4-6 PSI
0.3-0.4 BAR

FLOW
5-10 GPM
19-38 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$3,500

AQUALIEN FLOWER N°2

VOR - 1331

DIMENSIONS
86 x 30 x 30 IN
218 x 76 x 76 CM

PRESSURE
5-7 PSI
0.3-0.5 BAR

FLOW
1-5 GPM
4-19 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$2,900

AQUALIEN FLOWER N°3

VOR - 7389

DIMENSIONS
44 x 20 x 20 IN
112 x 50 x 50 CM

PRESSURE
3-4 PSI
0.2-0.3 BAR

FLOW
1-3 GPM
4-11 LPM

SMARTFLOW
-

BAY
TODDLER

COLORS
VORTEX COLOR CHOICES



\$4,700

AQUALIEN N°2

VOR - 7569

DIMENSIONS
124 x 59 x 58 IN
315 x 150 x 147 CM

PRESSURE
4-5 PSI
0.3-0.3 BAR

FLOW
10-25 GPM
38-95 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$4,700

AQUALIEN POWER FLOWER N°1

VOR - 7631

DIMENSIONS
86 x 44 x 58 IN
219 x 112 x 148 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
12-20 GPM
45-76 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



\$7,900

AQUALIEN POWER SPINNER

VOR - 7620

DIMENSIONS
123 x 30 x 59 IN
313 x 76 x 149 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
14-28 GPM
53-106 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



\$7,900

AQUALIEN RAINFOREST N°4

VOR - 7000

DIMENSIONS
44 x 52 x 57 IN
112 x 133 x 145 CM

PRESSURE
3-4 PSI
0.2-0.3 BAR








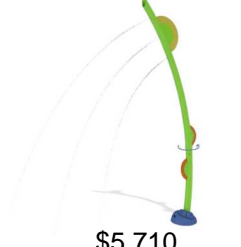



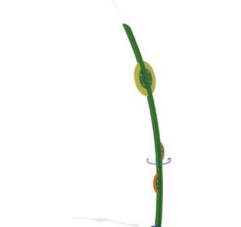
FLOW
3-9 GPM
11-34 LPM

SMARTFLOW
-

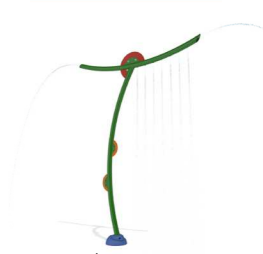








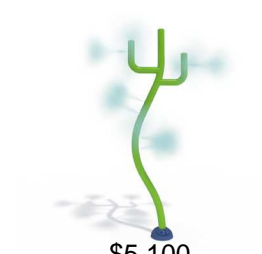
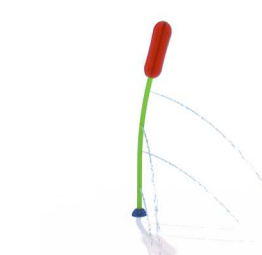
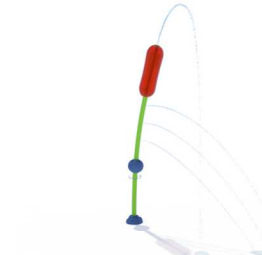
BAY
TODDLER

COLORS
VORTEX COLOR CHOICES

PRODUCT INDEX

 <p>\$10,250</p>	AQUALIEN RAINFOREST N°5 VOR - 7381 <div> <div>DIMENSIONS</div> 98 x 72 x 75 IN 249 x 183 x 191 CM </div> <div> <div>PRESSURE</div> 4-6 PSI 0.3-0.4 BAR </div> <div> <div>FLOW</div> 15-30 GPM 57-114 LPM </div> <div> <div>SMARTFLOW</div> - </div> <div> <div>BAY</div> FAMILY </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
	AQUALIEN RAINFOREST N°6 VOR - 7360 <div> <div>DIMENSIONS</div> 86 x 67 x 78 IN 218 x 170 x 198 CM </div> <div> <div>PRESSURE</div> 5-7 PSI 0.3-0.5 BAR </div> <div> <div>FLOW</div> 3-9 GPM 11-34 LPM </div> <div> <div>SMARTFLOW</div> 24-27 GPM </div> <div> <div>BAY</div> FAMILY </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$4,900</p>	ARCH VOR - 0515 <div> <div>DIMENSIONS</div> 87 x 14 x 74 IN 221 x 36 x 188 CM </div> <div> <div>PRESSURE</div> 10-25 PSI 0.7-1.7 BAR </div> <div> <div>FLOW</div> 18-27 GPM 68-102 LPM </div> <div> <div>SMARTFLOW</div> 9-18 GPM 34-68 LPM </div> <div> <div>BAY</div> FAMILY </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$5,670</p>	BAMBOO N°1 VOR - 7722 <div> <div>DIMENSIONS</div> 49 x 11 x 27 IN 124 x 28 x 69 CM </div> <div> <div>PRESSURE</div> 5-10 PSI 0.3-0.7 BAR </div> <div> <div>FLOW</div> 5-10 GPM 19-38 LPM </div> <div> <div>SMARTFLOW</div> 2-7 GPM 8-27 LPM </div> <div> <div>BAY</div> TEEN </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$5,670</p>	BAMBOO N°2 VOR - 7721 <div> <div>DIMENSIONS</div> 49 x 11 x 32 IN 124 x 28 x 81 CM </div> <div> <div>PRESSURE</div> 5-10 PSI 0.3-0.7 BAR </div> <div> <div>FLOW</div> 5-10 GPM 19-38 LPM </div> <div> <div>SMARTFLOW</div> 2-7 GPM 8-27 LPM </div> <div> <div>BAY</div> TEEN </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$5,670</p>	BAMBOO N°3 VOR - 7720 <div> <div>DIMENSIONS</div> 52 x 11 x 29 IN 132 x 28 x 74 CM </div> <div> <div>PRESSURE</div> 5-10 PSI 0.3-0.7 BAR </div> <div> <div>FLOW</div> 5-10 GPM 19-38 LPM </div> <div> <div>SMARTFLOW</div> 2-7 GPM 8-27 LPM </div> <div> <div>BAY</div> TEEN </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$8,100</p>	BAMBOO N°4 VOR - 7723 <div> <div>DIMENSIONS</div> 127 x 15 x 70 IN 323 x 38 x 178 CM </div> <div> <div>PRESSURE</div> 5-10 PSI 0.3-0.7 BAR </div> <div> <div>FLOW</div> 3-5 GPM 11-19 LPM </div> <div> <div>SMARTFLOW</div> - </div> <div> <div>BAY</div> FAMILY & TEEN </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$5,710</p>	BAMBOO N°5 VOR - 7724 <div> <div>DIMENSIONS</div> 113 x 11 x 34 IN 287 x 28 x 86 CM </div> <div> <div>PRESSURE</div> 5-10 PSI 0.3-0.7 BAR </div> <div> <div>FLOW</div> 3-6 GPM 11-23 LPM </div> <div> <div>SMARTFLOW</div> - </div> <div> <div>BAY</div> FAMILY & TEEN </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$12,150</p>	BAMBOO N°6 VOR - 7725 <div> <div>DIMENSIONS</div> 206 x 12 x 83 IN 523 x 30 x 211 CM </div> <div> <div>PRESSURE</div> 5-10 PSI 0.3-0.7 BAR </div> <div> <div>FLOW</div> 1-2 GPM 4-8 LPM </div> <div> <div>SMARTFLOW</div> - </div> <div> <div>BAY</div> FAMILY </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$5,400</p>	BAMBOO N°7 VOR - 7726 <div> <div>DIMENSIONS</div> 121 x 11 x 36 IN 307 x 28 x 91 CM </div> <div> <div>PRESSURE</div> 5-10 PSI 0.3-0.7 BAR </div> <div> <div>FLOW</div> 2-3 GPM 8-11 LPM </div> <div> <div>SMARTFLOW</div> - </div> <div> <div>BAY</div> FAMILY </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$8,190</p>	BAMBOO N°8 VOR - 7727 <div> <div>DIMENSIONS</div> 138 x 11 x 38 IN 350 x 28 x 97 CM </div> <div> <div>PRESSURE</div> 5-10 PSI 0.3-0.7 BAR </div> <div> <div>FLOW</div> 16-16 GPM 61-61 LPM </div> <div> <div>SMARTFLOW</div> - </div> <div> <div>BAY</div> FAMILY </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>
 <p>\$6,000</p>	BAMBOO N°9 VOR - 7728 <div> <div>DIMENSIONS</div> 110 x 11 x 35 IN 279 x 28 x 89 CM </div> <div> <div>PRESSURE</div> 5-10 PSI 0.3-0.7 BAR </div> <div> <div>FLOW</div> 1-2 GPM 4-8 LPM </div> <div> <div>SMARTFLOW</div> - </div> <div> <div>BAY</div> TEEN </div> <div> <div>COLORS</div> VORTEX COLOR CHOICES </div>

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 <p>\$7,180</p>	<p>BAMBOO N°10 VOR - 7730</p> <table> <tr> <td>DIMENSIONS 121 x 11 x 94 IN 307 x 28 x 239 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 10-10 GPM 38-38 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 121 x 11 x 94 IN 307 x 28 x 239 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 10-10 GPM 38-38 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 121 x 11 x 94 IN 307 x 28 x 239 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 10-10 GPM 38-38 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>BLOOM N°2 VOR - 7487</p> <table> <tr> <td>DIMENSIONS 109 x 34 x 28 IN 277 x 86 x 71 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 5-12 GPM 19-45 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 109 x 34 x 28 IN 277 x 86 x 71 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 5-12 GPM 19-45 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 109 x 34 x 28 IN 277 x 86 x 71 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 5-12 GPM 19-45 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>BLOOM N°1 VOR - 7486</p> <table> <tr> <td>DIMENSIONS 120 x 55 x 64 IN 305 x 140 x 163 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 7-10 GPM 26-38 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 120 x 55 x 64 IN 305 x 140 x 163 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 7-10 GPM 26-38 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 120 x 55 x 64 IN 305 x 140 x 163 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 7-10 GPM 26-38 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						
	<p>BOAT WHEEL N°1 VOR - 7678</p> <table> <tr> <td>DIMENSIONS 52 x 22 x 29 IN 132 x 56 x 74 CM</td><td>PRESSURE 10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW 3-6 GPM 11-23 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 52 x 22 x 29 IN 132 x 56 x 74 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR	FLOW 3-6 GPM 11-23 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 52 x 22 x 29 IN 132 x 56 x 74 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR						
FLOW 3-6 GPM 11-23 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
 <p>\$3,210</p>	<p>BOLLARD ACTIVATOR N°2 VOR - 7399</p> <table> <tr> <td>DIMENSIONS 39 x 14 x 14 IN 99 x 36 x 36 CM</td><td>PRESSURE -</td></tr> <tr> <td>FLOW -</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY -</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 39 x 14 x 14 IN 99 x 36 x 36 CM	PRESSURE -	FLOW -	SMARTFLOW -	BAY -	COLORS VORTEX COLOR CHOICES
DIMENSIONS 39 x 14 x 14 IN 99 x 36 x 36 CM	PRESSURE -						
FLOW -	SMARTFLOW -						
BAY -	COLORS VORTEX COLOR CHOICES						
 <p>\$2,870</p>	<p>BOLLARD ACTIVATOR N°3 VOR - 0611</p> <table> <tr> <td>DIMENSIONS 39 x 14 x 14 IN 99 x 36 x 36 CM</td><td>PRESSURE -</td></tr> <tr> <td>FLOW 0-0 GPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY -</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 39 x 14 x 14 IN 99 x 36 x 36 CM	PRESSURE -	FLOW 0-0 GPM	SMARTFLOW -	BAY -	COLORS VORTEX COLOR CHOICES
DIMENSIONS 39 x 14 x 14 IN 99 x 36 x 36 CM	PRESSURE -						
FLOW 0-0 GPM	SMARTFLOW -						
BAY -	COLORS VORTEX COLOR CHOICES						
	<p>BOW N°1 VOR - 7673</p> <table> <tr> <td>DIMENSIONS 46 x 25 x 79 IN 117 x 63 x 200 CM</td><td>PRESSURE 10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW 3-5 GPM 11-19 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS 4 COLOR OPTIONS</td></tr> </table>	DIMENSIONS 46 x 25 x 79 IN 117 x 63 x 200 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR	FLOW 3-5 GPM 11-19 LPM	SMARTFLOW -	BAY TEEN	COLORS 4 COLOR OPTIONS
DIMENSIONS 46 x 25 x 79 IN 117 x 63 x 200 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR						
FLOW 3-5 GPM 11-19 LPM	SMARTFLOW -						
BAY TEEN	COLORS 4 COLOR OPTIONS						
 <p>\$7,390</p>	<p>BUCKET TRIO VOR - 0103</p> <table> <tr> <td>DIMENSIONS 129 x 87 x 77 IN 328 x 221 x 196 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 9-15 GPM 34-57 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 129 x 87 x 77 IN 328 x 221 x 196 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 9-15 GPM 34-57 LPM	SMARTFLOW -	BAY TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 129 x 87 x 77 IN 328 x 221 x 196 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 9-15 GPM 34-57 LPM	SMARTFLOW -						
BAY TEEN	COLORS VORTEX COLOR CHOICES						
 <p>\$7,900</p>	<p>BULLFROG VOR - 0524</p> <table> <tr> <td>DIMENSIONS 78 x 56 x 143 IN 197 x 141 x 362 CM</td><td>PRESSURE 10-25 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW 22-33 GPM 83-125 LPM</td><td>SMARTFLOW 11-22 GPM 42-83 LPM</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 78 x 56 x 143 IN 197 x 141 x 362 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR	FLOW 22-33 GPM 83-125 LPM	SMARTFLOW 11-22 GPM 42-83 LPM	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 78 x 56 x 143 IN 197 x 141 x 362 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR						
FLOW 22-33 GPM 83-125 LPM	SMARTFLOW 11-22 GPM 42-83 LPM						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
 <p>\$5,100</p>	<p>CACTUS VOR - 7390</p> <table> <tr> <td>DIMENSIONS 124 x 14 x 37 IN 315 x 36 x 95 CM</td><td>PRESSURE 10-25 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW 24-36 GPM 91-136 LPM</td><td>SMARTFLOW 12-24 GPM 45-91 LPM</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 124 x 14 x 37 IN 315 x 36 x 95 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR	FLOW 24-36 GPM 91-136 LPM	SMARTFLOW 12-24 GPM 45-91 LPM	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 124 x 14 x 37 IN 315 x 36 x 95 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR						
FLOW 24-36 GPM 91-136 LPM	SMARTFLOW 12-24 GPM 45-91 LPM						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>CATTAIL VOR - 7538</p> <table> <tr> <td>DIMENSIONS 128 x 13 x 33 IN 325 x 33 x 84 CM</td><td>PRESSURE 6-6 PSI 0.4-0.4 BAR</td></tr> <tr> <td>FLOW 2-6 GPM 8-23 LPM</td><td>SMARTFLOW 24-27 GPM</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 128 x 13 x 33 IN 325 x 33 x 84 CM	PRESSURE 6-6 PSI 0.4-0.4 BAR	FLOW 2-6 GPM 8-23 LPM	SMARTFLOW 24-27 GPM	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 128 x 13 x 33 IN 325 x 33 x 84 CM	PRESSURE 6-6 PSI 0.4-0.4 BAR						
FLOW 2-6 GPM 8-23 LPM	SMARTFLOW 24-27 GPM						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>CATTAIL TWIRL VOR - 7782</p> <table> <tr> <td>DIMENSIONS 143 x 12 x 35 IN 362 x 30 x 89 CM</td><td>PRESSURE 5-6 PSI 0.3-0.4 BAR</td></tr> <tr> <td>FLOW 2-4 GPM 8-16 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 143 x 12 x 35 IN 362 x 30 x 89 CM	PRESSURE 5-6 PSI 0.3-0.4 BAR	FLOW 2-4 GPM 8-16 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 143 x 12 x 35 IN 362 x 30 x 89 CM	PRESSURE 5-6 PSI 0.3-0.4 BAR						
FLOW 2-4 GPM 8-16 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						

PRODUCT INDEX



\$6,610

CRAB N°1 VOR - 7208

DIMENSIONS
26 x 24 x 25 IN
67 x 60 x 64 CM

PRESSURE
10-15 PSI
0.7-1.0 BAR

FLOW
3-5 GPM
11-19 LPM

SMARTFLOW
-

BAY
TODDLER

COLORS
VORTEX COLOR CHOICES



FISH N°1 VOR - 7218

DIMENSIONS
33 x 27 x 14 IN
83 x 69 x 36 CM

PRESSURE
10-15 PSI
0.7-1.0 BAR

FLOW
3-5 GPM
11-19 LPM

SMARTFLOW
-

BAY
TODDLER

COLORS
VORTEX COLOR CHOICES



CRAB N°2 VOR - 7220

DIMENSIONS
53 x 23 x 25 IN
134 x 59 x 64 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
16-23 GPM
61-87 LPM

SMARTFLOW
-

BAY
TODDLER

COLORS
VORTEX COLOR CHOICES



\$13,600

FIVE BELLS VOR - 7383

DIMENSIONS
135 x 89 x 93 IN
343 x 226 x 236 CM

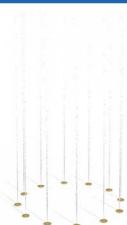
PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
15-25 GPM
57-95 LPM

SMARTFLOW
-

BAY
TEEN

COLORS
VORTEX COLOR CHOICES



\$3,400

CYLINDER SPRAY VOR - 0307

DIMENSIONS
0 x 38 x 38 IN
0 x 97 x 97 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
35-50 GPM
132-189 LPM

SMARTFLOW
16-32 GPM
61-121 LPM

BAY
-

COLORS
-



\$8,800

FLOWER VOR - 0564

DIMENSIONS
140 x 75 x 75 IN
356 x 191 x 191 CM

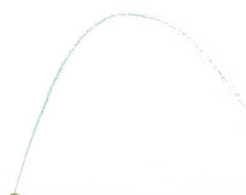
PRESSURE
10-15 PSI
0.7-1.0 BAR

FLOW
20-30 GPM
76-114 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$400

DIRECTIONAL WATER JET VOR - 0305

DIMENSIONS
0 x 3 x 3 IN
0 x 8 x 8 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
3-5 GPM
11-19 LPM

SMARTFLOW
-

BAY
-

COLORS
-



\$5,000

FLOWER N°1 VOR - 7549

DIMENSIONS
135 x 28 x 65 IN
343 x 72 x 165 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
5-25 GPM
19-95 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$3,700

DONUT SPRAY VOR - 0306

DIMENSIONS
0 x 26 x 26 IN
0 x 66 x 66 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
35-50 GPM
132-189 LPM

SMARTFLOW
16-32 GPM
41-189 LPM

BAY
-

COLORS
-



\$6,940

FLOWER N°2 VOR - 7550

DIMENSIONS
135 x 107 x 30 IN
343 x 272 x 76 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
15-30 GPM
57-114 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$11,090

DUMPING PELICAN VOR - 0109

DIMENSIONS
159 x 64 x 17 IN
404 x 163 x 43 CM

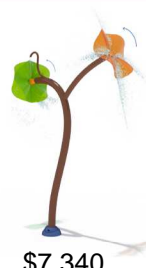
PRESSURE
10-15 PSI
0.7-1.0 BAR

FLOW
5-10 GPM
19-38 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
AS SHOWN



\$7,340

FLOWER N°4 VOR - 7552

DIMENSIONS
154 x 79 x 30 IN
392 x 201 x 76 CM

PRESSURE
7-10 PSI
0.5-0.7 BAR

FLOW
7-18 GPM
26-68 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES

PRODUCT INDEX



\$8,210

FLOWER N°5 VOR - 7557

DIMENSIONS
153 x 15 x 102 IN
388 x 38 x 260 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
6-10 GPM
23-38 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



\$8,220

FLOWER N°6 VOR - 7558

DIMENSIONS
153 x 30 x 95 IN
389 x 76 x 242 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
15-25 GPM
57-95 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



\$6,430

FLOWER N°7 VOR - 7559

DIMENSIONS
153 x 15 x 51 IN
389 x 38 x 130 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
3-5 GPM
11-19 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



\$6,090

FLOWER N°8 VOR - 7560

DIMENSIONS
153 x 30 x 44 IN
389 x 76 x 111 CM

PRESSURE
7-10 PSI
0.5-0.7 BAR

FLOW
7-18 GPM
26-68 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$11,060

FLOWER N°9 VOR - 7541

DIMENSIONS
153 x 94 x 76 IN
389 x 239 x 193 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
9-15 GPM
34-57 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



\$1,900

FOAMING GEYSER N°1 VOR - 7020

DIMENSIONS
4 x 10 x 10 IN
10 x 25 x 25 CM

PRESSURE
2-5 PSI
0.1-0.3 BAR

FLOW
8-20 GPM
30-76 LPM

SMARTFLOW
-

BAY
-

COLORS
-



\$2,500

FOAMING GEYSER N°2 VOR - 8084

DIMENSIONS
1 x 11 x 11 IN
3 x 28 x 28 CM

PRESSURE
2-5 PSI
0.1-0.3 BAR

FLOW
8-20 GPM
30-76 LPM

SMARTFLOW
-

BAY
-

COLORS
-



\$1,720

FOOT ACTIVATOR VOR - 0606

DIMENSIONS
0 x 5 x 5 IN
0 x 11 x 11 CM

PRESSURE
-

FLOW
0-0 GPM

SMARTFLOW
-

BAY
-

COLORS
AS SHOWN



\$400

FOUNTAIN SPRAY VOR - 7513

DIMENSIONS
0 x 3 x 3 IN
0 x 8 x 8 CM

PRESSURE
1-4 PSI
0.1-0.3 BAR

FLOW
3-7 GPM
11-26 LPM

SMARTFLOW
-

BAY
-

COLORS
-



FOUNTAIN SPRAY N°2 VOR - 7676

DIMENSIONS
0 x 3 x 3 IN
0 x 8 x 8 CM

PRESSURE
1-4 PSI
0.1-0.3 BAR

FLOW
3-7 GPM
11-26 LPM

SMARTFLOW
-

BAY
-

COLORS
-



\$5,480

FROG N°1 VOR - 7200

DIMENSIONS
25 x 20 x 20 IN
64 x 51 x 51 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
10-13 GPM
38-49 LPM

SMARTFLOW
-

BAY
TODDLER

COLORS
VORTEX COLOR CHOICES



\$5,960

FROG N°2 VOR - 7201

DIMENSIONS
25 x 20 x 20 IN
64 x 51 x 51 CM

PRESSURE
10-15 PSI
0.7-1.0 BAR

FLOW
3-5 GPM
11-19 LPM

SMARTFLOW
-

BAY
TODDLER

COLORS
VORTEX COLOR CHOICES

PRODUCT INDEX



\$6,150

FROG N°4 VOR - 7203

DIMENSIONS
47x20x20 IN
119x51x51 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
24-27 GPM
91-102 LPM

SMARTFLOW
24-27 GPM

BAY
TODDLER

COLORS
VORTEX COLOR CHOICES



FROG N°5 VOR - 7658

DIMENSIONS
111x58x40 IN
282x147x102 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
80-100 GPM
303-379 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



FROG N°6 VOR - 7659

DIMENSIONS
111x58x40 IN
282x147x102 CM

PRESSURE
10-20 PSI
0.7-1.4 BAR

FLOW
25-35 GPM
95-133 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



\$11,090

FUMBLING FIVE VOR - 7384

DIMENSIONS
129x97x97 IN
328x246x246 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
15-25 GPM
57-95 LPM

SMARTFLOW
9-15 GPM
35-57 LPM

BAY
TEEN

COLORS
VORTEX COLOR CHOICES



\$400

GROUND GEYSER VOR - 0301

DIMENSIONS
0x4x4 IN
0x10x10 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
5-10 GPM
19-38 LPM

SMARTFLOW
2-7 GPM
8-27 LPM

BAY
-

COLORS
-



\$700

GROUND GUSHER VOR - 0300

DIMENSIONS
0x5x5 IN
0x13x13 CM

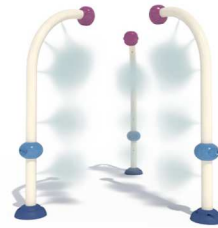
PRESSURE
5-15 PSI
0.3-1.0 BAR

FLOW
12-35 GPM
45-132 LPM

SMARTFLOW
-

BAY
-

COLORS
-



\$10,710

HUDDLE SPRAY N°3 VOR - 7565

DIMENSIONS
96x123x85 IN
244x312x216 CM

PRESSURE
10-25 PSI
0.7-1.7 BAR

FLOW
30-60 GPM
114-170 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$11,720

JELLYFISH N°1 VOR - 7215

DIMENSIONS
108x40x42 IN
274x102x107 CM

PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
80-100 GPM
303-379 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



\$390

JET STREAM VOR - 7512

DIMENSIONS
0x3x3 IN
0x8x8 CM

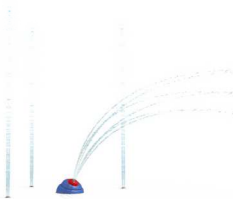
PRESSURE
5-10 PSI
0.3-0.7 BAR

FLOW
2-3 GPM
8-11 LPM

SMARTFLOW
-

BAY
-

COLORS
-



LAUNCH POD N°1 VOR - 7651

DIMENSIONS
6x36x59 IN
15x91x150 CM

PRESSURE
3-8 PSI
0.2-0.5 BAR

FLOW
14-25 GPM
52-95 LPM

SMARTFLOW
-

BAY
-

COLORS
-



\$10,940

LAUNCH POD N°2 VOR - 7615

DIMENSIONS
6x57x237 IN
15x145x602 CM

PRESSURE
3-8 PSI
0.2-0.5 BAR

FLOW
27-50 GPM
104-190 LPM

SMARTFLOW
-

BAY
-

COLORS
-



\$6,090

LEAF N°1 VOR - 7548

DIMENSIONS
122x102x37 IN
310x259x94 CM

PRESSURE
10-20 PSI
0.7-1.4 BAR

FLOW
6-8 GPM
23-31 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES

PRODUCT INDEX



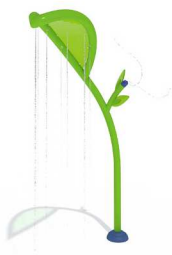
LEAF N°2
VOR - 7657

DIMENSIONS 122x102x37 IN 310x259x94 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 3-8 GPM 11-30 LPM	SMARTFLOW -
BAY FAMILY	COLORS VORTEX COLOR CHOICES



LEAF N°3
VOR - 7672

DIMENSIONS 129x94x112 IN 328x239x285 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 5-15 GPM 19-57 LPM	SMARTFLOW -
BAY FAMILY	COLORS VORTEX COLOR CHOICES



LEAF N°4
VOR - 7675

DIMENSIONS 129x102x41 IN 328x259x104 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 6-13 GPM 23-49 LPM	SMARTFLOW -
BAY FAMILY	COLORS VORTEX COLOR CHOICES



LED LIGHT
VOR - 7050

DIMENSIONS 0x7x7 IN 0x18x18 CM	PRESSURE -
FLOW -	SMARTFLOW -
BAY -	COLORS RGB COLORS



LOBSTER
VOR - 7656

DIMENSIONS 117x188x167 IN 297x478x424 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR
FLOW 100-150 GPM 379-568 LPM	SMARTFLOW -
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES



\$4,520

LOOP N°1
VOR - 7719

DIMENSIONS 50x23x11 IN 127x59x28 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR
FLOW 5-10 GPM 19-38 LPM	SMARTFLOW 3-5 GPM 11-19 LPM
BAY TEEN	COLORS VORTEX COLOR CHOICES



LOOP N°2
VOR - 7553

DIMENSIONS 50x11x21 IN 127x28x53 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR
FLOW 5-10 GPM 19-38 LPM	SMARTFLOW -
BAY TEEN	COLORS VORTEX COLOR CHOICES



\$900

MAGIC MIST N°1
VOR - 7510

DIMENSIONS 1x5x5 IN 3x13x13 CM	PRESSURE 10x25 PSI 0.7-1.7 BAR
FLOW 6-9 GPM 23x35 LPM	SMARTFLOW -
BAY -	COLORS VORTEX COLOR CHOICES



\$990

MAGIC MIST N°2
VOR - 8099

DIMENSIONS 0x5x5 IN 0x13x13 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR
FLOW 6-9 GPM 23-34 LPM	SMARTFLOW -
BAY -	COLORS -



\$3,500

OMBRELLO N°1
VOR - 7445

DIMENSIONS 122x36x36 IN 310x91x91 CM	PRESSURE 5-6 PSI 0.3-0.4 BAR
FLOW 5-7 GPM 19-27 LPM	SMARTFLOW 2-3 GPM
BAY FAMILY	COLORS AS SHOWN



\$3,500

OMBRELLO N°2
VOR - 7440

DIMENSIONS 122x36x36 IN 310x91x91 CM	PRESSURE 5-6 PSI 0.3-0.4 BAR
FLOW 5-7 GPM 19-27 LPM	SMARTFLOW 2-3 GPM 8-11 LPM
BAY FAMILY	COLORS VORTEX COLOR CHOICES

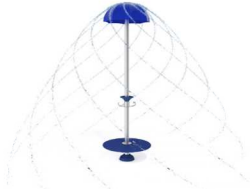


\$3,500

OMBRELLO N°3
VOR - 7441

DIMENSIONS 112x36x38 IN 284x91x96 CM	PRESSURE 5-6 PSI 0.3-0.4 BAR
FLOW 5-7 GPM 19-27 LPM	SMARTFLOW 2-3 GPM 8-11 LPM
BAY FAMILY	COLORS VORTEX COLOR CHOICES

PRODUCT INDEX



\$8,500

OMBRELLO SPIN N°1

VOR - 7448

DIMENSIONS
122 x 37 x 37 IN
310 x 94 x 94 CM

PRESSURE
5-6 PSI
0.3-0.4 BAR

FLOW
5-7 GPM
19-26 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
6 COLOR OPTIONS



PERISPRAY

VOR - 0533

DIMENSIONS
87 x 14 x 22 IN
221 x 36 x 55 CM

PRESSURE
10-15 PSI
0.7-1.0 BAR

FLOW
5-7 GPM
19-26 LPM

SMARTFLOW
2-5 GPM
8-19 LPM

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



\$8,500

OMBRELLO SPIN N°2

VOR - 7449

DIMENSIONS
42 x 37 x 37 IN
107 x 94 x 94 CM

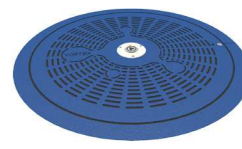
PRESSURE
4-6 PSI
0.3-0.4 BAR

FLOW
5-7 GPM
19-27 LPM

SMARTFLOW
4-6 GPM
15-23 LPM

BAY
TEEN

COLORS
6 COLOR OPTIONS



PLAYSAFE DRAIN - PRESS & PLAY N°1

VOR - 1001-4001

DIMENSIONS
0 x 30 x 30 IN
0 x 76 x 76 CM

PRESSURE
-

FLOW
-

SMARTFLOW
-

BAY
-

COLORS
AS SHOWN



\$5,400

OMBRELLO TWIRL

VOR - 7446

DIMENSIONS
122 x 36 x 36 IN
305 x 91 x 91 CM

PRESSURE
5-6 PSI
0.3-0.4 BAR

FLOW
5-7 GPM
19-27 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



PLAYSAFE DRAIN - PRESS & PLAY N°3

VOR - 1001-4003

DIMENSIONS
39 x 30 x 30 IN
99 x 76 x 76 CM

PRESSURE
-

FLOW
-

SMARTFLOW
-

BAY
-

COLORS
VORTEX COLOR CHOICES



\$5,400

OMBRELLO TWIRL N°2

VOR - 7447

DIMENSIONS
120 x 36 x 36 IN
306 x 91 x 91 CM

PRESSURE
5-6 PSI
0.3-0.4 BAR

FLOW
5-7 GPM
19-27 LPM

SMARTFLOW
-

BAY
FAMILY & TEEN

COLORS
VORTEX COLOR CHOICES



PLAYSAFE DRAIN - SPRAY & PLAY N°1

VOR - 1001-4002

DIMENSIONS
0 x 5 x 5 IN
0 x 13 x 13 CM

PRESSURE
5-15 PSI
0.3-1.0 BAR

FLOW
5-10 GPM
19-38 LPM

SMARTFLOW
-

BAY
-

COLORS
AS SHOWN



\$11,000

ORBIT

VOR - 7398

DIMENSIONS
75 x 85 x 92 IN
190 x 215 x 234 CM

PRESSURE
10-25 PSI
0.7-1.7 BAR

FLOW
30-45 GPM
114-170 LPM

SMARTFLOW
15-30 GPM
57-114 LPM

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$5,900

PLUX ARCH

VOR - 7397

DIMENSIONS
89 x 14 x 74 IN
227 x 36 x 188 CM

PRESSURE
10-25 PSI
0.7-1.7 BAR

FLOW
20-30 GPM
76-114 LPM

SMARTFLOW
10-20 GPM
38-76 LPM

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$8,000

PALM TREE

VOR - 0509

DIMENSIONS
150 x 79 x 78 IN
381 x 200 x 198 CM

PRESSURE
10-15 PSI
0.7-1.0 BAR

FLOW
20-30 GPM
76-114 LPM

SMARTFLOW
-

BAY
FAMILY

COLORS
VORTEX COLOR CHOICES



\$3,800

PLUX CANE

VOR - 7395

DIMENSIONS
123 x 14 x 56 IN
312 x 36 x 142 CM

PRESSURE
10-15 PSI
0.7-1.0 BAR



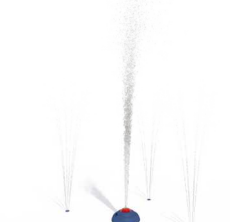




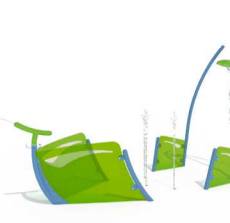
FLOW
11-17 GPM
42-64 LPM

SMARTFLOW
-





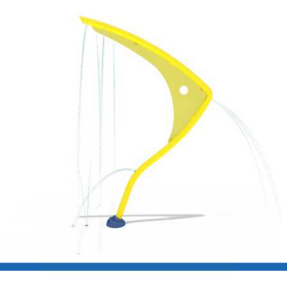

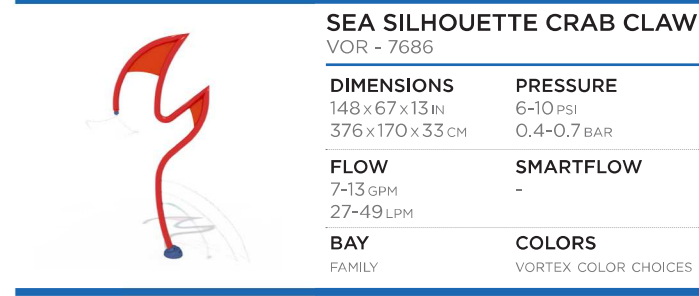
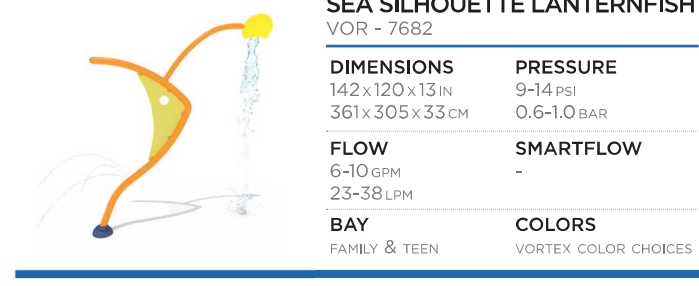
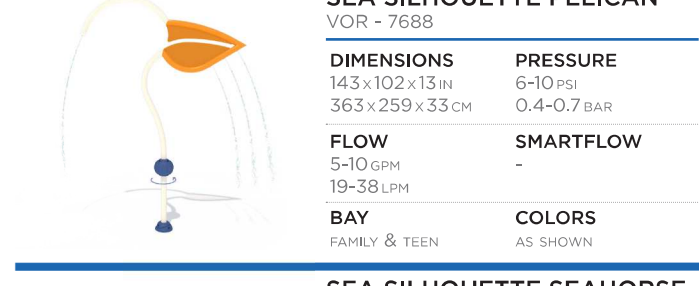
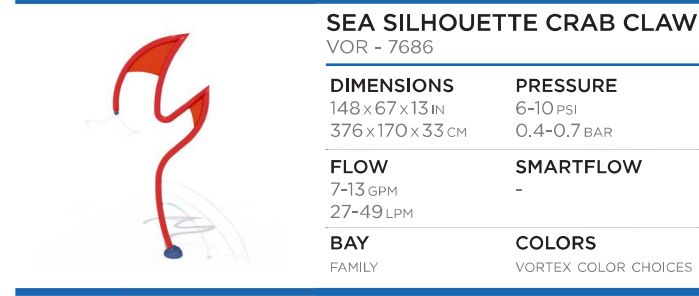
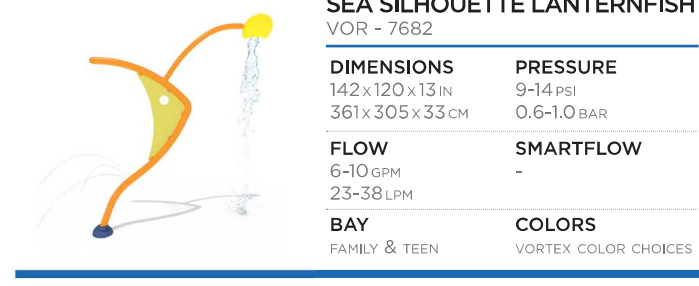
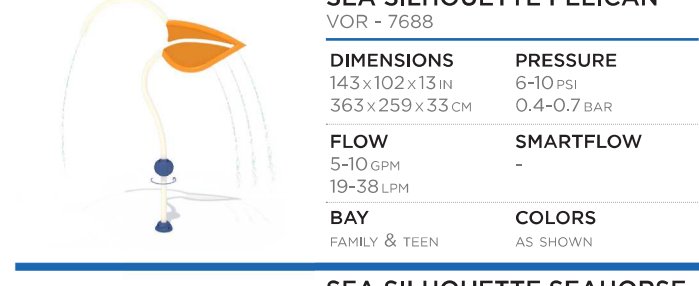
BAY
FAMILY

COLORS
VORTEX COLOR CHOICES

PRODUCT INDEX

 <p>\$7,630</p>	PLUX THRILL'N'SPILL VOR - 7567 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>132x72x70IN 335x183x178 CM</td><td>15-20 PSI 1.0-1.4 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>25-30 GPM 95-114 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY & TEEN</td><td>VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS	PRESSURE	132x72x70IN 335x183x178 CM	15-20 PSI 1.0-1.4 BAR	FLOW	SMARTFLOW	25-30 GPM 95-114 LPM	-	BAY	COLORS	FAMILY & TEEN	VORTEX COLOR CHOICES
DIMENSIONS	PRESSURE												
132x72x70IN 335x183x178 CM	15-20 PSI 1.0-1.4 BAR												
FLOW	SMARTFLOW												
25-30 GPM 95-114 LPM	-												
BAY	COLORS												
FAMILY & TEEN	VORTEX COLOR CHOICES												
 <p>\$6,550</p>	PLUX WATER TRIO VOR - 7391 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>120x72x63IN 305x183x160 CM</td><td>10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>30-35 GPM 114-132 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY</td><td>VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS	PRESSURE	120x72x63IN 305x183x160 CM	10-15 PSI 0.7-1.0 BAR	FLOW	SMARTFLOW	30-35 GPM 114-132 LPM	-	BAY	COLORS	FAMILY	VORTEX COLOR CHOICES
DIMENSIONS	PRESSURE												
120x72x63IN 305x183x160 CM	10-15 PSI 0.7-1.0 BAR												
FLOW	SMARTFLOW												
30-35 GPM 114-132 LPM	-												
BAY	COLORS												
FAMILY	VORTEX COLOR CHOICES												
 <p>\$3,400</p>	POWER VOLCANO VOR - 7650 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>5x59x35IN 14x151x89 CM</td><td>3-8 PSI 0.2-0.6 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>15-20 GPM 57-76 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>-</td><td>-</td></tr> </table>	DIMENSIONS	PRESSURE	5x59x35IN 14x151x89 CM	3-8 PSI 0.2-0.6 BAR	FLOW	SMARTFLOW	15-20 GPM 57-76 LPM	-	BAY	COLORS	-	-
DIMENSIONS	PRESSURE												
5x59x35IN 14x151x89 CM	3-8 PSI 0.2-0.6 BAR												
FLOW	SMARTFLOW												
15-20 GPM 57-76 LPM	-												
BAY	COLORS												
-	-												
 <p>\$10,500</p>	RAINBOW N°1 VOR - 0517 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>80x49x160IN 203x124x406 CM</td><td>10-25 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>40-60 GPM 151-227 LPM</td><td>20-40 GPM 76-151 LPM</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY</td><td>VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS	PRESSURE	80x49x160IN 203x124x406 CM	10-25 PSI 0.7-1.7 BAR	FLOW	SMARTFLOW	40-60 GPM 151-227 LPM	20-40 GPM 76-151 LPM	BAY	COLORS	FAMILY	VORTEX COLOR CHOICES
DIMENSIONS	PRESSURE												
80x49x160IN 203x124x406 CM	10-25 PSI 0.7-1.7 BAR												
FLOW	SMARTFLOW												
40-60 GPM 151-227 LPM	20-40 GPM 76-151 LPM												
BAY	COLORS												
FAMILY	VORTEX COLOR CHOICES												
 <p>\$8,200</p>	RAINBOW N°2 VOR - 0548 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>81x41x167IN 206x104x424 CM</td><td>10-25 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>30-45 GPM 114-170 LPM</td><td>15-30 GPM 57-114 LPM</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY</td><td>VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS	PRESSURE	81x41x167IN 206x104x424 CM	10-25 PSI 0.7-1.7 BAR	FLOW	SMARTFLOW	30-45 GPM 114-170 LPM	15-30 GPM 57-114 LPM	BAY	COLORS	FAMILY	VORTEX COLOR CHOICES
DIMENSIONS	PRESSURE												
81x41x167IN 206x104x424 CM	10-25 PSI 0.7-1.7 BAR												
FLOW	SMARTFLOW												
30-45 GPM 114-170 LPM	15-30 GPM 57-114 LPM												
BAY	COLORS												
FAMILY	VORTEX COLOR CHOICES												
 <p>\$12,710</p>	RAINING BUCKET N°1 VOR - 7503 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>130x93x93IN 330x236x236 CM</td><td>5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>60-75 GPM 228-284 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY</td><td>VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS	PRESSURE	130x93x93IN 330x236x236 CM	5-10 PSI 0.3-0.7 BAR	FLOW	SMARTFLOW	60-75 GPM 228-284 LPM	-	BAY	COLORS	FAMILY	VORTEX COLOR CHOICES
DIMENSIONS	PRESSURE												
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FLOW	SMARTFLOW												
60-75 GPM 228-284 LPM	-												
BAY	COLORS												
FAMILY	VORTEX COLOR CHOICES												
 <p>\$600</p>	ROOSTER TAIL VOR - 0303 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>0x5x5IN 0x13x13 CM</td><td>5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>10-15 GPM 38-57 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>-</td><td>-</td></tr> </table>	DIMENSIONS	PRESSURE	0x5x5IN 0x13x13 CM	5-10 PSI 0.3-0.7 BAR	FLOW	SMARTFLOW	10-15 GPM 38-57 LPM	-	BAY	COLORS	-	-
DIMENSIONS	PRESSURE												
0x5x5IN 0x13x13 CM	5-10 PSI 0.3-0.7 BAR												
FLOW	SMARTFLOW												
10-15 GPM 38-57 LPM	-												
BAY	COLORS												
-	-												
	SAIL TWIRL N°1 VOR - 7677 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>173x71x12IN 439x180x30 CM</td><td>10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>3-6 GPM 12-23 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY & TEEN</td><td>VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS	PRESSURE	173x71x12IN 439x180x30 CM	10-15 PSI 0.7-1.0 BAR	FLOW	SMARTFLOW	3-6 GPM 12-23 LPM	-	BAY	COLORS	FAMILY & TEEN	VORTEX COLOR CHOICES
DIMENSIONS	PRESSURE												
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FLOW	SMARTFLOW												
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BAY	COLORS												
FAMILY & TEEN	VORTEX COLOR CHOICES												
	SAILBOAT N°1 VOR - 7671 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>159x96x238IN 404x242x605 CM</td><td>10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>20-38 GPM 76-144 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY & TEEN</td><td>4 COLOR OPTIONS</td></tr> </table>	DIMENSIONS	PRESSURE	159x96x238IN 404x242x605 CM	10-15 PSI 0.7-1.0 BAR	FLOW	SMARTFLOW	20-38 GPM 76-144 LPM	-	BAY	COLORS	FAMILY & TEEN	4 COLOR OPTIONS
DIMENSIONS	PRESSURE												
159x96x238IN 404x242x605 CM	10-15 PSI 0.7-1.0 BAR												
FLOW	SMARTFLOW												
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BAY	COLORS												
FAMILY & TEEN	4 COLOR OPTIONS												
	SAILBOAT N°2 VOR - 7679 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>159x79x231IN 404x201x587 CM</td><td>10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>10-20 GPM 38-76 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY & TEEN</td><td>4 COLOR OPTIONS</td></tr> </table>	DIMENSIONS	PRESSURE	159x79x231IN 404x201x587 CM	10-15 PSI 0.7-1.0 BAR	FLOW	SMARTFLOW	10-20 GPM 38-76 LPM	-	BAY	COLORS	FAMILY & TEEN	4 COLOR OPTIONS
DIMENSIONS	PRESSURE												
159x79x231IN 404x201x587 CM	10-15 PSI 0.7-1.0 BAR												
FLOW	SMARTFLOW												
10-20 GPM 38-76 LPM	-												
BAY	COLORS												
FAMILY & TEEN	4 COLOR OPTIONS												
	SAILBOAT N°3 VOR - 7680 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>123x79x231IN 312x201x587 CM</td><td>10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>11-22 GPM 42-83 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY & TEEN</td><td>4 COLOR OPTIONS</td></tr> </table>	DIMENSIONS	PRESSURE	123x79x231IN 312x201x587 CM	10-15 PSI 0.7-1.0 BAR	FLOW	SMARTFLOW	11-22 GPM 42-83 LPM	-	BAY	COLORS	FAMILY & TEEN	4 COLOR OPTIONS
DIMENSIONS	PRESSURE												
123x79x231IN 312x201x587 CM	10-15 PSI 0.7-1.0 BAR												
FLOW	SMARTFLOW												
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BAY	COLORS												
FAMILY & TEEN	4 COLOR OPTIONS												
	SAILBOAT N°4 VOR - 7681 <table> <tr> <td>DIMENSIONS</td><td>PRESSURE</td></tr> <tr> <td>123x79x208IN 312x201x528 CM</td><td>10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW</td><td>SMARTFLOW</td></tr> <tr> <td>13-23 GPM 49-87 LPM</td><td>-</td></tr> <tr> <td>BAY</td><td>COLORS</td></tr> <tr> <td>FAMILY & TEEN</td><td>4 COLOR OPTIONS</td></tr> </table>	DIMENSIONS	PRESSURE	123x79x208IN 312x201x528 CM	10-15 PSI 0.7-1.0 BAR	FLOW	SMARTFLOW	13-23 GPM 49-87 LPM	-	BAY	COLORS	FAMILY & TEEN	4 COLOR OPTIONS
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13-23 GPM 49-87 LPM	-												
BAY	COLORS												
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 <p>\$60,330</p>	<p>SCORPION VOR - 7652</p> <table> <tr> <td>DIMENSIONS 190x139x187 IN 482x353x475 CM</td><td>PRESSURE 10-25 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW 81-145 GPM 307-549 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 190x139x187 IN 482x353x475 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR	FLOW 81-145 GPM 307-549 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 190x139x187 IN 482x353x475 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR						
FLOW 81-145 GPM 307-549 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						
 <p>\$6,600</p>	<p>SEA SERPENT N°1 VOR - 7577</p> <table> <tr> <td>DIMENSIONS 135x17x62 IN 343x44x158 CM</td><td>PRESSURE 10-20 PSI 0.7-1.4 BAR</td></tr> <tr> <td>FLOW 20-40 GPM 76-151 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 135x17x62 IN 343x44x158 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR	FLOW 20-40 GPM 76-151 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 135x17x62 IN 343x44x158 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR						
FLOW 20-40 GPM 76-151 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
 <p>\$9,690</p>	<p>SEA SERPENT N°2 VOR - 0525</p> <table> <tr> <td>DIMENSIONS 147x33x150 IN 373x85x381 CM</td><td>PRESSURE 5-15 PSI 0.3-1.0 BAR</td></tr> <tr> <td>FLOW 30-50 GPM 114-189 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 147x33x150 IN 373x85x381 CM	PRESSURE 5-15 PSI 0.3-1.0 BAR	FLOW 30-50 GPM 114-189 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 147x33x150 IN 373x85x381 CM	PRESSURE 5-15 PSI 0.3-1.0 BAR						
FLOW 30-50 GPM 114-189 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
 <p>\$13,100</p>	<p>SEA SERPENT N°3 VOR - 0527</p> <table> <tr> <td>DIMENSIONS 147x51x265 IN 373x130x673 CM</td><td>PRESSURE 10-20 PSI 0.7-1.4 BAR</td></tr> <tr> <td>FLOW 50-60 GPM 189-227 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 147x51x265 IN 373x130x673 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR	FLOW 50-60 GPM 189-227 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 147x51x265 IN 373x130x673 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR						
FLOW 50-60 GPM 189-227 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						
	<p>SEA SILHOUETTE ANGELFISH VOR - 7685</p> <table> <tr> <td>DIMENSIONS 140x93x13 IN 356x236x33 CM</td><td>PRESSURE 6-10 PSI 0.4-0.7 BAR</td></tr> <tr> <td>FLOW 11-19 GPM 42-72 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 140x93x13 IN 356x236x33 CM	PRESSURE 6-10 PSI 0.4-0.7 BAR	FLOW 11-19 GPM 42-72 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
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FLOW 11-19 GPM 42-72 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>SEA SILHOUETTE CRAB VOR - 7690</p> <table> <tr> <td>DIMENSIONS 148x206x65 IN 376x523x165 CM</td><td>PRESSURE 10-25 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW 18-34 GPM 68-129 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 148x206x65 IN 376x523x165 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR	FLOW 18-34 GPM 68-129 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 148x206x65 IN 376x523x165 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR						
FLOW 18-34 GPM 68-129 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>SEA SILHOUETTE CRAB CLAW VOR - 7686</p> <table> <tr> <td>DIMENSIONS 148x67x13 IN 376x170x33 CM</td><td>PRESSURE 6-10 PSI 0.4-0.7 BAR</td></tr> <tr> <td>FLOW 7-13 GPM 27-49 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 148x67x13 IN 376x170x33 CM	PRESSURE 6-10 PSI 0.4-0.7 BAR	FLOW 7-13 GPM 27-49 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 148x67x13 IN 376x170x33 CM	PRESSURE 6-10 PSI 0.4-0.7 BAR						
FLOW 7-13 GPM 27-49 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>SEA SILHOUETTE FISH VOR - 7687</p> <table> <tr> <td>DIMENSIONS 144x59x13 IN 366x150x33 CM</td><td>PRESSURE 6-10 PSI 0.4-0.7 BAR</td></tr> <tr> <td>FLOW 10-18 GPM 38-68 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 144x59x13 IN 366x150x33 CM	PRESSURE 6-10 PSI 0.4-0.7 BAR	FLOW 10-18 GPM 38-68 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 144x59x13 IN 366x150x33 CM	PRESSURE 6-10 PSI 0.4-0.7 BAR						
FLOW 10-18 GPM 38-68 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>SEA SILHOUETTE LANTERNFISH VOR - 7682</p> <table> <tr> <td>DIMENSIONS 142x120x13 IN 361x305x33 CM</td><td>PRESSURE 9-14 PSI 0.6-1.0 BAR</td></tr> <tr> <td>FLOW 6-10 GPM 23-38 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 142x120x13 IN 361x305x33 CM	PRESSURE 9-14 PSI 0.6-1.0 BAR	FLOW 6-10 GPM 23-38 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 142x120x13 IN 361x305x33 CM	PRESSURE 9-14 PSI 0.6-1.0 BAR						
FLOW 6-10 GPM 23-38 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						
	<p>SEA SILHOUETTE OCTOPUS VOR - 7691</p> <table> <tr> <td>DIMENSIONS 85x134x129 IN 216x340x327 CM</td><td>PRESSURE 10-25 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW 20-32 GPM 76-121 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 85x134x129 IN 216x340x327 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR	FLOW 20-32 GPM 76-121 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 85x134x129 IN 216x340x327 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR						
FLOW 20-32 GPM 76-121 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						
	<p>SEA SILHOUETTE PELICAN VOR - 7688</p> <table> <tr> <td>DIMENSIONS 143x102x13 IN 363x259x33 CM</td><td>PRESSURE 6-10 PSI 0.4-0.7 BAR</td></tr> <tr> <td>FLOW 5-10 GPM 19-38 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS AS SHOWN</td></tr> </table>	DIMENSIONS 143x102x13 IN 363x259x33 CM	PRESSURE 6-10 PSI 0.4-0.7 BAR	FLOW 5-10 GPM 19-38 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS AS SHOWN
DIMENSIONS 143x102x13 IN 363x259x33 CM	PRESSURE 6-10 PSI 0.4-0.7 BAR						
FLOW 5-10 GPM 19-38 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS AS SHOWN						
	<p>SEA SILHOUETTE SEAHORSE VOR - 7684</p> <table> <tr> <td>DIMENSIONS 150x50x13 IN 381x127x33 CM</td><td>PRESSURE 6-8 PSI 0.4-0.6 BAR</td></tr> <tr> <td>FLOW 4-7 GPM 15-27 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 150x50x13 IN 381x127x33 CM	PRESSURE 6-8 PSI 0.4-0.6 BAR	FLOW 4-7 GPM 15-27 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 150x50x13 IN 381x127x33 CM	PRESSURE 6-8 PSI 0.4-0.6 BAR						
FLOW 4-7 GPM 15-27 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						

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SEA SILHOUETTE SHARK VOR - 7683

DIMENSIONS 162x82x55 IN 411x208x140 CM	PRESSURE 6-10 PSI 0.4-0.7 BAR
FLOW 8-15 GPM 36-57 LPM	SMARTFLOW -
BAY TEEN	COLORS VORTEX COLOR CHOICES



SEA SILHOUETTE TURTLE VOR - 7689

DIMENSIONS 144x127x13 IN 366x322x33 CM	PRESSURE 6-10 PSI 0.4-0.7 BAR
FLOW 9-18 GPM 34-68 LPM	SMARTFLOW -
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES



SEAWEED N°1 VOR - 7779

DIMENSIONS 57x11x25 IN 145x28x64 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 2-4 GPM 8-16 LPM	SMARTFLOW -
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES



SEAWEED N°2 VOR - 7780

DIMENSIONS 73x11x21 IN 185x28x53 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 3-6 GPM 11-22 LPM	SMARTFLOW -
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES



SEAWEED N°3 VOR - 7781

DIMENSIONS 87x22x24 IN 221x55x61 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 4-7 GPM 15-27 LPM	SMARTFLOW -
BAY FAMILY	COLORS VORTEX COLOR CHOICES



SIDE WINDER VOR - 7518

DIMENSIONS 0x5x5 IN 0x13x13 CM	PRESSURE 5-15 PSI 0.3-1.0 BAR
FLOW 10-20 GPM 39-77 LPM	SMARTFLOW -
BAY -	COLORS -

\$700



SILHOUETTE N°1 VOR - 7772

DIMENSIONS 40x13x13 IN 102x33x33 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 10-18 GPM 38-68 LPM	SMARTFLOW -
BAY TODDLER	COLORS VORTEX COLOR CHOICES



SILHOUETTE N°2 VOR - 7773

DIMENSIONS 55x13x13 IN 139x33x33 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 2-7 GPM 8-27 LPM	SMARTFLOW -
BAY TODDLER & FAMILY	COLORS VORTEX COLOR CHOICES



SILHOUETTE N°3 VOR - 7774

DIMENSIONS 79x26x13 IN 201x66x33 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 4-8 GPM 15-30 LPM	SMARTFLOW -
BAY TODDLER & FAMILY	COLORS VORTEX COLOR CHOICES



SILHOUETTE N°4 VOR - 7776

DIMENSIONS 112x21x25 IN 284x53x64 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR
FLOW 4-7 GPM 15-26 LPM	SMARTFLOW -
BAY FAMILY	COLORS VORTEX COLOR CHOICES



SILHOUETTE N°5 VOR - 7777

DIMENSIONS 85x19x23 IN 216x48x58 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 4-7 GPM 15-26 LPM	SMARTFLOW -
BAY FAMILY	COLORS VORTEX COLOR CHOICES




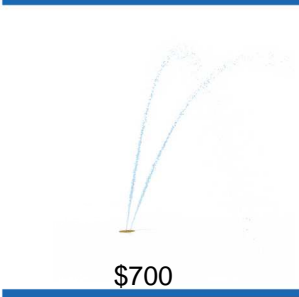






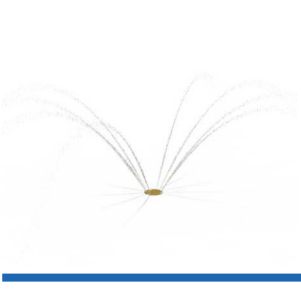
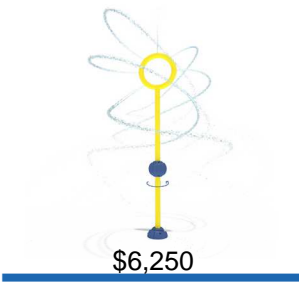


SNAIL N°3 VOR - 7207












DIMENSIONS 51x20x23 IN 132x51x56 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 57-65 GPM 216-246 LPM	SMARTFLOW 24-27 GPM 91-102 LPM
BAY TODDLER	COLORS VORTEX COLOR CHOICES

\$7,420

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	<p>SNAIL N°4 VOR - 7217</p> <table> <tr> <td>DIMENSIONS 31x18x27 IN 79x45x68 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 5-8 GPM 19-30 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TODDLER</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 31x18x27 IN 79x45x68 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 5-8 GPM 19-30 LPM	SMARTFLOW -	BAY TODDLER	COLORS VORTEX COLOR CHOICES
DIMENSIONS 31x18x27 IN 79x45x68 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 5-8 GPM 19-30 LPM	SMARTFLOW -						
BAY TODDLER	COLORS VORTEX COLOR CHOICES						
	<p>SPIN N°1 VOR - 7450</p> <table> <tr> <td>DIMENSIONS 44x37x37 IN 111x94x94 CM</td><td>PRESSURE 4-6 PSI 0.3-0.4 BAR</td></tr> <tr> <td>FLOW 4-6 GPM 15-23 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS 6 COLOR OPTIONS</td></tr> </table>	DIMENSIONS 44x37x37 IN 111x94x94 CM	PRESSURE 4-6 PSI 0.3-0.4 BAR	FLOW 4-6 GPM 15-23 LPM	SMARTFLOW -	BAY TEEN	COLORS 6 COLOR OPTIONS
DIMENSIONS 44x37x37 IN 111x94x94 CM	PRESSURE 4-6 PSI 0.3-0.4 BAR						
FLOW 4-6 GPM 15-23 LPM	SMARTFLOW -						
BAY TEEN	COLORS 6 COLOR OPTIONS						
	<p>SNAKE N°1 VOR - 7213</p> <table> <tr> <td>DIMENSIONS 137x57x24 IN 348x145x61 CM</td><td>PRESSURE 10-20 PSI 0.7-1.4 BAR</td></tr> <tr> <td>FLOW 20-40 GPM 76-151 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table> <p>\$6,850</p>	DIMENSIONS 137x57x24 IN 348x145x61 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR	FLOW 20-40 GPM 76-151 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 137x57x24 IN 348x145x61 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR						
FLOW 20-40 GPM 76-151 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>SPLIT STREAM VOR - 7516</p> <table> <tr> <td>DIMENSIONS 0x5x5 IN 0x13x13 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 5-10 GPM 19-39 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY -</td><td>COLORS -</td></tr> </table> <p>\$700</p>	DIMENSIONS 0x5x5 IN 0x13x13 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 5-10 GPM 19-39 LPM	SMARTFLOW -	BAY -	COLORS -
DIMENSIONS 0x5x5 IN 0x13x13 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 5-10 GPM 19-39 LPM	SMARTFLOW -						
BAY -	COLORS -						
	<p>SNAKE N°2 VOR - 7214</p> <table> <tr> <td>DIMENSIONS 142x56x20 IN 361x143x51 CM</td><td>PRESSURE 10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW 5-8 GPM 19-30 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table> <p>\$7,420</p>	DIMENSIONS 142x56x20 IN 361x143x51 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR	FLOW 5-8 GPM 19-30 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 142x56x20 IN 361x143x51 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR						
FLOW 5-8 GPM 19-30 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>SPRAY CANNON VOR - 0201</p> <table> <tr> <td>DIMENSIONS 40x19x14 IN 102x48x36 CM</td><td>PRESSURE 10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW 5-10 GPM 19-38 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table> <p>\$5,500</p>	DIMENSIONS 40x19x14 IN 102x48x36 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR	FLOW 5-10 GPM 19-38 LPM	SMARTFLOW -	BAY TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 40x19x14 IN 102x48x36 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR						
FLOW 5-10 GPM 19-38 LPM	SMARTFLOW -						
BAY TEEN	COLORS VORTEX COLOR CHOICES						
	<p>SPIDER VOR - 7653</p> <table> <tr> <td>DIMENSIONS 125x191x205 IN 3178x485x521 CM</td><td>PRESSURE 10-25 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW 59-118 GPM 224-447 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table> <p>\$40,400</p>	DIMENSIONS 125x191x205 IN 3178x485x521 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR	FLOW 59-118 GPM 224-447 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 125x191x205 IN 3178x485x521 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR						
FLOW 59-118 GPM 224-447 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						
	<p>SPRAY LOOP VOR - 0519</p> <table> <tr> <td>DIMENSIONS 64x75x3 IN 163x191x8 CM</td><td>PRESSURE 10-25 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW 10-15 GPM 38-57 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table> <p>\$2,900</p>	DIMENSIONS 64x75x3 IN 163x191x8 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR	FLOW 10-15 GPM 38-57 LPM	SMARTFLOW -	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 64x75x3 IN 163x191x8 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR						
FLOW 10-15 GPM 38-57 LPM	SMARTFLOW -						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>SPIDEY SPRAY VOR - 7517</p> <table> <tr> <td>DIMENSIONS 1x5x5 IN 3x13x13 CM</td><td>PRESSURE 2-5 PSI 0.1-0.3 BAR</td></tr> <tr> <td>FLOW 7-10 GPM 27-38 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY -</td><td>COLORS -</td></tr> </table> <p>\$900</p>	DIMENSIONS 1x5x5 IN 3x13x13 CM	PRESSURE 2-5 PSI 0.1-0.3 BAR	FLOW 7-10 GPM 27-38 LPM	SMARTFLOW -	BAY -	COLORS -
DIMENSIONS 1x5x5 IN 3x13x13 CM	PRESSURE 2-5 PSI 0.1-0.3 BAR						
FLOW 7-10 GPM 27-38 LPM	SMARTFLOW -						
BAY -	COLORS -						
	<p>SPRAY LOOPS VOR - 0518</p> <table> <tr> <td>DIMENSIONS 64x76x76 IN 162x193x193 CM</td><td>PRESSURE 10-15 PSI 0.7-1.7 BAR</td></tr> <tr> <td>FLOW 40-60 GPM 152-228 LPM</td><td>SMARTFLOW 20-40 GPM 76-152 LPM</td></tr> <tr> <td>BAY FAMILY</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table> <p>\$9,500</p>	DIMENSIONS 64x76x76 IN 162x193x193 CM	PRESSURE 10-15 PSI 0.7-1.7 BAR	FLOW 40-60 GPM 152-228 LPM	SMARTFLOW 20-40 GPM 76-152 LPM	BAY FAMILY	COLORS VORTEX COLOR CHOICES
DIMENSIONS 64x76x76 IN 162x193x193 CM	PRESSURE 10-15 PSI 0.7-1.7 BAR						
FLOW 40-60 GPM 152-228 LPM	SMARTFLOW 20-40 GPM 76-152 LPM						
BAY FAMILY	COLORS VORTEX COLOR CHOICES						
	<p>SPIDEY SPRAY N°2 VOR - 7674</p> <table> <tr> <td>DIMENSIONS 0x5x5 IN 0x13x13 CM</td><td>PRESSURE 2-5 PSI 0.1-0.3 BAR</td></tr> <tr> <td>FLOW 7-10 GPM 26-38 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY -</td><td>COLORS -</td></tr> </table>	DIMENSIONS 0x5x5 IN 0x13x13 CM	PRESSURE 2-5 PSI 0.1-0.3 BAR	FLOW 7-10 GPM 26-38 LPM	SMARTFLOW -	BAY -	COLORS -
DIMENSIONS 0x5x5 IN 0x13x13 CM	PRESSURE 2-5 PSI 0.1-0.3 BAR						
FLOW 7-10 GPM 26-38 LPM	SMARTFLOW -						
BAY -	COLORS -						
	<p>SUNSPRAY VOR - 7578</p> <table> <tr> <td>DIMENSIONS 121x14x26 IN 307x36x66 CM</td><td>PRESSURE 15-20 PSI 1.0-1.4 BAR</td></tr> <tr> <td>FLOW 10-15 GPM 38-57 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table> <p>\$6,250</p>	DIMENSIONS 121x14x26 IN 307x36x66 CM	PRESSURE 15-20 PSI 1.0-1.4 BAR	FLOW 10-15 GPM 38-57 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 121x14x26 IN 307x36x66 CM	PRESSURE 15-20 PSI 1.0-1.4 BAR						
FLOW 10-15 GPM 38-57 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						

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 <p>\$30,800</p>	SUPERSPLASH N°1 VOR - 0128 <table> <tr> <td>DIMENSIONS 220 x 93 x 124 IN 559 x 237 x 315 CM</td><td>PRESSURE 10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW 25-38 GPM 95-144 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 220 x 93 x 124 IN 559 x 237 x 315 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR	FLOW 25-38 GPM 95-144 LPM	SMARTFLOW -	BAY TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 220 x 93 x 124 IN 559 x 237 x 315 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR						
FLOW 25-38 GPM 95-144 LPM	SMARTFLOW -						
BAY TEEN	COLORS VORTEX COLOR CHOICES						
 <p>\$28,650</p>	SUPERSPLASH N°2 VOR - 0130 <table> <tr> <td>DIMENSIONS 251 x 88 x 129 IN 638 x 224 x 328 CM</td><td>PRESSURE 10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW 25-38 GPM 97-147 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 251 x 88 x 129 IN 638 x 224 x 328 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR	FLOW 25-38 GPM 97-147 LPM	SMARTFLOW -	BAY TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 251 x 88 x 129 IN 638 x 224 x 328 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR						
FLOW 25-38 GPM 97-147 LPM	SMARTFLOW -						
BAY TEEN	COLORS VORTEX COLOR CHOICES						
 <p>\$60,000</p>	SUPERWAVE VOR - 0136 <table> <tr> <td>DIMENSIONS 247 x 67 x 156 IN 627 x 170 x 396 CM</td><td>PRESSURE 10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW 25-38 GPM 97-147 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 247 x 67 x 156 IN 627 x 170 x 396 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR	FLOW 25-38 GPM 97-147 LPM	SMARTFLOW -	BAY TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 247 x 67 x 156 IN 627 x 170 x 396 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR						
FLOW 25-38 GPM 97-147 LPM	SMARTFLOW -						
BAY TEEN	COLORS VORTEX COLOR CHOICES						
 <p>\$3,900</p>	TEAM SPRAY N°1 VOR - 7640 <table> <tr> <td>DIMENSIONS 1 x 44 x 93 IN 3 x 112 x 236 CM</td><td>PRESSURE 1-10 PSI 0.1-0.7 BAR</td></tr> <tr> <td>FLOW 15-20 GPM 57-76 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY -</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 1 x 44 x 93 IN 3 x 112 x 236 CM	PRESSURE 1-10 PSI 0.1-0.7 BAR	FLOW 15-20 GPM 57-76 LPM	SMARTFLOW -	BAY -	COLORS VORTEX COLOR CHOICES
DIMENSIONS 1 x 44 x 93 IN 3 x 112 x 236 CM	PRESSURE 1-10 PSI 0.1-0.7 BAR						
FLOW 15-20 GPM 57-76 LPM	SMARTFLOW -						
BAY -	COLORS VORTEX COLOR CHOICES						
 <p>\$5,620</p>	TEAM SPRAY N°2 VOR - 8061 <table> <tr> <td>DIMENSIONS 1 x 38 x 38 IN 3 x 97 x 97 CM</td><td>PRESSURE 5-15 PSI 0.3-1.0 BAR</td></tr> <tr> <td>FLOW 36-60 GPM 76-182 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY -</td><td>COLORS -</td></tr> </table>	DIMENSIONS 1 x 38 x 38 IN 3 x 97 x 97 CM	PRESSURE 5-15 PSI 0.3-1.0 BAR	FLOW 36-60 GPM 76-182 LPM	SMARTFLOW -	BAY -	COLORS -
DIMENSIONS 1 x 38 x 38 IN 3 x 97 x 97 CM	PRESSURE 5-15 PSI 0.3-1.0 BAR						
FLOW 36-60 GPM 76-182 LPM	SMARTFLOW -						
BAY -	COLORS -						
 <p>\$9,200</p>	THREE BELLS N°1 VOR - 7372 <table> <tr> <td>DIMENSIONS 132 x 77 x 87 IN 335 x 196 x 221 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 9-15 GPM 35-57 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 132 x 77 x 87 IN 335 x 196 x 221 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 9-15 GPM 35-57 LPM	SMARTFLOW -	BAY TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 132 x 77 x 87 IN 335 x 196 x 221 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 9-15 GPM 35-57 LPM	SMARTFLOW -						
BAY TEEN	COLORS VORTEX COLOR CHOICES						
 <p>\$10,680</p>	THREE BELLS N°2 VOR - 7571 <table> <tr> <td>DIMENSIONS 131 x 90 x 90 IN 333 x 229 x 229 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 9-15 GPM 35-57 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 131 x 90 x 90 IN 333 x 229 x 229 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 9-15 GPM 35-57 LPM	SMARTFLOW -	BAY TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 131 x 90 x 90 IN 333 x 229 x 229 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 9-15 GPM 35-57 LPM	SMARTFLOW -						
BAY TEEN	COLORS VORTEX COLOR CHOICES						
 <p>\$3,900</p>	TOT TWISTER VOR - 7030 <table> <tr> <td>DIMENSIONS 27 x 13 x 13 IN 69 x 33 x 33 CM</td><td>PRESSURE 10-20 PSI 0.7-1.4 BAR</td></tr> <tr> <td>FLOW 10-20 GPM 38-76 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TODDLER</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 27 x 13 x 13 IN 69 x 33 x 33 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR	FLOW 10-20 GPM 38-76 LPM	SMARTFLOW -	BAY TODDLER	COLORS VORTEX COLOR CHOICES
DIMENSIONS 27 x 13 x 13 IN 69 x 33 x 33 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR						
FLOW 10-20 GPM 38-76 LPM	SMARTFLOW -						
BAY TODDLER	COLORS VORTEX COLOR CHOICES						
 <p>\$12,240</p>	TRICKY BELLS VOR - 7564 <table> <tr> <td>DIMENSIONS 136 x 86 x 86 IN 345 x 219 x 219 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 9-15 GPM 35-57 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 136 x 86 x 86 IN 345 x 219 x 219 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 9-15 GPM 35-57 LPM	SMARTFLOW -	BAY TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 136 x 86 x 86 IN 345 x 219 x 219 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 9-15 GPM 35-57 LPM	SMARTFLOW -						
BAY TEEN	COLORS VORTEX COLOR CHOICES						
 <p>\$5,900</p>	TRICKY SOAKER VOR - 1343 <table> <tr> <td>DIMENSIONS 103 x 35 x 30 IN 262 x 89 x 76 CM</td><td>PRESSURE 10-20 PSI 0.7-1.4 BAR</td></tr> <tr> <td>FLOW 10-25 GPM 38-95 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY FAMILY & TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 103 x 35 x 30 IN 262 x 89 x 76 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR	FLOW 10-25 GPM 38-95 LPM	SMARTFLOW -	BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 103 x 35 x 30 IN 262 x 89 x 76 CM	PRESSURE 10-20 PSI 0.7-1.4 BAR						
FLOW 10-25 GPM 38-95 LPM	SMARTFLOW -						
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES						
	TUBE N°1 VOR - 0220 <table> <tr> <td>DIMENSIONS 46 x 11 x 26 IN 117 x 28 x 66 CM</td><td>PRESSURE 10-15 PSI 0.7-1.0 BAR</td></tr> <tr> <td>FLOW 5-10 GPM 19-38 LPM</td><td>SMARTFLOW 3-5 GPM 11-19 LPM</td></tr> <tr> <td>BAY TEEN</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 46 x 11 x 26 IN 117 x 28 x 66 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR	FLOW 5-10 GPM 19-38 LPM	SMARTFLOW 3-5 GPM 11-19 LPM	BAY TEEN	COLORS VORTEX COLOR CHOICES
DIMENSIONS 46 x 11 x 26 IN 117 x 28 x 66 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR						
FLOW 5-10 GPM 19-38 LPM	SMARTFLOW 3-5 GPM 11-19 LPM						
BAY TEEN	COLORS VORTEX COLOR CHOICES						
	TURTLE N°2 VOR - 7216 <table> <tr> <td>DIMENSIONS 23 x 26 x 29 IN 58 x 66 x 74 CM</td><td>PRESSURE 5-10 PSI 0.3-0.7 BAR</td></tr> <tr> <td>FLOW 6-10 GPM 23-38 LPM</td><td>SMARTFLOW -</td></tr> <tr> <td>BAY TODDLER</td><td>COLORS VORTEX COLOR CHOICES</td></tr> </table>	DIMENSIONS 23 x 26 x 29 IN 58 x 66 x 74 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR	FLOW 6-10 GPM 23-38 LPM	SMARTFLOW -	BAY TODDLER	COLORS VORTEX COLOR CHOICES
DIMENSIONS 23 x 26 x 29 IN 58 x 66 x 74 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR						
FLOW 6-10 GPM 23-38 LPM	SMARTFLOW -						
BAY TODDLER	COLORS VORTEX COLOR CHOICES						

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TURTLE N°3
VOR - 7219

DIMENSIONS 50 x 24 x 28 IN 127 x 61 x 71 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 16-23 GPM 61-86 LPM	SMARTFLOW -
BAY TODDLER	COLORS VORTEX COLOR CHOICES



WATER JELLY N°3
VOR - 7032

DIMENSIONS 0 x 36 x 42 IN 0 x 91 x 107 CM	PRESSURE 1-2 PSI 0.1-0.1 BAR
FLOW 30-35 GPM 114-132 LPM	SMARTFLOW -
BAY -	COLORS -

\$2,200



TWISTER
VOR - 0534

DIMENSIONS 41 x 14 x 14 IN 105 x 36 x 36 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR
FLOW 5-10 GPM 19-38 LPM	SMARTFLOW 2-7 GPM 8-26 LPM
BAY TODDLER	COLORS VORTEX COLOR CHOICES

\$4,900



WATER TUNNEL N°1
VOR - 0304

DIMENSIONS 0 x 3 x 120 IN 0 x 8 x 305 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 25-40 GPM 95-151 LPM	SMARTFLOW 16-24 GPM 61-91 LPM
BAY -	COLORS -

\$2,990



UMBRELLA
VOR - 0114

DIMENSIONS 120 x 60 x 60 IN 305 x 152 x 152 CM	PRESSURE 5-15 PSI 0.3-1.0 BAR
FLOW 50-100 GPM 190-379 LPM	SMARTFLOW -
BAY FAMILY & TEEN	COLORS VORTEX COLOR CHOICES

\$7,300



WATER TUNNEL N°2
VOR - 0309

DIMENSIONS 0 x 3 x 56 IN 0 x 8 x 142 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 10-20 GPM 38-76 LPM	SMARTFLOW 8-12 GPM 30-45 LPM
BAY -	COLORS -

\$1,700



VOLCANO
VOR - 1339

DIMENSIONS 6 x 11 x 11 IN 15 x 28 x 28 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 1-5 GPM 4-19 LPM	SMARTFLOW -
BAY -	COLORS -



WATER TUNNEL N°3
VOR - 7641

DIMENSIONS 0 x 44 x 86 IN 0 x 112 x 218 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 30-50 GPM 114-189 LPM	SMARTFLOW 16-24 GPM 61-91 LPM
BAY -	COLORS -

\$3,600



WALL SPRAY
VOR - 0302

DIMENSIONS 0 x 4 x 4 IN 0 x 10 x 10 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 10-15 GPM 38-57 LPM	SMARTFLOW -
BAY -	COLORS -

\$680



WATER WALL N°1
VOR - 0318

DIMENSIONS 0 x 3 x 51 IN 0 x 8 x 130 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
FLOW 15-20 GPM 57-76 LPM	SMARTFLOW -
BAY -	COLORS -

\$2,400



WATER JELLY N°1
VOR - 7010

DIMENSIONS 0 x 5 x 5 IN 0 x 13 x 13 CM	PRESSURE 1-2 PSI 0.1-0.1 BAR
FLOW 10-12 GPM 38-45 LPM	SMARTFLOW -
BAY -	COLORS -

\$750









WATER WILLOW
VOR - 7394

DIMENSIONS 134 x 87 x 87 IN 340 x 221 x 221 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR
FLOW 15-30 GPM 57-114 LPM	SMARTFLOW -
BAY FAMILY	COLORS VORTEX COLOR CHOICES

\$7,400

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	WATERBUG N°1 VOR - 7580	
	DIMENSIONS 21x20x20 IN 53x51x51 CM	PRESSURE 10-15 PSI 0.3-0.7 BAR
\$4,800	FLOW 20-25 GPM 77-97 LPM	SMARTFLOW -
	BAY TODDLER	COLORS VORTEX COLOR CHOICES
	WATERBUG N°2 VOR - 7581	
	DIMENSIONS 22x18x20 IN 56x46x51 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
\$5,800	FLOW 5-7 GPM 19-27 LPM	SMARTFLOW -
	BAY TODDLER	COLORS VORTEX COLOR CHOICES
	WATERBUG N°3 VOR - 7582	
	DIMENSIONS 22x18x20 IN 56x46x51 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
\$5,800	FLOW 5-7 GPM 19-27 LPM	SMARTFLOW -
	BAY TODDLER	COLORS VORTEX COLOR CHOICES
	WATERBUG N°4 VOR - 7661	
	DIMENSIONS 43x20x20 IN 110x51x51 CM	PRESSURE 5-10 PSI 0.3-0.7 BAR
	FLOW 57-65 GPM 216-246 LPM	SMARTFLOW 20-28 GPM 76-106 LPM
	BAY TODDLER	COLORS VORTEX COLOR CHOICES
	WAVY PALM VOR - 0510	
	DIMENSIONS 150x82x82 IN 380x208x208 CM	PRESSURE 10-15 PSI 0.7-1.0 BAR
\$8,390	FLOW 20-30 GPM 76-114 LPM	SMARTFLOW -
	BAY FAMILY	COLORS VORTEX COLOR CHOICES
	WHALE VOR - 0522	
	DIMENSIONS 100x111x225 IN 254x282x572 CM	PRESSURE 10-25 PSI 0.7-1.7 BAR
\$15,390	FLOW 62-93 GPM 235-353 LPM	SMARTFLOW 31-62 GPM 117-235 LPM
	BAY FAMILY	COLORS VORTEX COLOR CHOICES

Appendix D

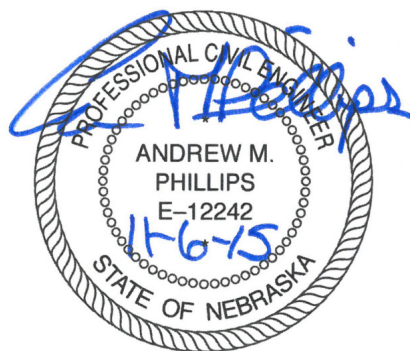
REPORT OF PRELIMINARY GEOTECHNICAL EXPLORATION

FAIRBURY PARK & POOL STUDY

NEAR THE INTERSECTION OF WEST 8TH STREET & PARK ROAD FAIRBURY, NEBRASKA

**PREPARED FOR
CITY OF FAIRBURY, NEBRASKA**

**PREPARED BY
OLSSON ASSOCIATES**



NOVEMBER 6, 2015

OLSSON PROJECT No: 015-2112

601 P Street, Lincoln, NE • (402) 474-6311 • FAX (402) 474-5160



Date: November 6, 2015

City of Fairbury, Nebraska
Attn: Homer Ward
PO Box 554
Fairbury, Nebraska 68352

RE: Preliminary Geotechnical Exploration
Fairbury Park & Pool Study
Fairbury, Nebraska
Olsson Project No. 015-2122

Dear Mr. Ward:

Olsson Associates has completed the authorized preliminary geotechnical exploration for the above referenced project. The preliminary geotechnical exploration was conducted to evaluate physical characteristics of subsurface conditions with respect to design and construction of this project. The enclosed preliminary report summarizes the project characteristics as we understand them, presents the findings of the borings and laboratory tests, discusses the observed subsurface conditions, and provides preliminary geotechnical engineering recommendations for this project.

We appreciate the opportunity to provide our geotechnical engineering services for this project. If you have any questions or need further assistance, please contact us at your convenience. We are also staffed and equipped to provide construction testing and inspection services on this project as well.

Respectfully submitted,
Olsson Associates

A handwritten signature in blue ink that reads 'Andrew M. Phillips'.

Andrew M. Phillips, P.E.
Geotechnical Engineer
402.458.5625

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A. PROJECT UNDERSTANDING

A.1. GEOTECHNICAL SCOPE

This report presents the results of the preliminary geotechnical subsurface exploration performed for the proposed Fairbury Park & Pool Study project in Fairbury, Nebraska.

The purpose of this exploration was to evaluate the subsurface conditions and provide preliminary recommendations regarding the design of foundations and floor slabs of the proposed Fairbury pool improvements. We have completed the following scope of services for this project:

- Performed a site reconnaissance and reviewed geologic subsurface conditions.
- Drilled two soil test borings to a depth of 15 feet in the proposed site area.
- Performed laboratory tests on selected soil samples obtained during the drilling operations.
- Conducted a geotechnical engineering evaluation using information obtained from our observations, soil test borings and laboratory tests, and information available regarding the proposed construction.
- Preparation of this Preliminary Report of Geotechnical Exploration presenting the soil test borings, laboratory test results, and a summary of our engineering evaluations and recommendations.

The scope of this exploration did not include any environmental assessment for the presence of wetlands and/or hazardous or toxic materials in the soil or groundwater on or near the site. Any statements in this report regarding odors, discoloration, or suspicious conditions are strictly for the information of our client.

A.2. SITE LOCATION AND DESCRIPTION

The project site is located southwest of the intersection of West 8th Street and Park Road in Fairbury, Nebraska. At the time of our field exploration, the site was utilized as an existing pool, bath house, grass vegetation and gravel parking lot, and was accessible with a truck-mounted drill rig. The approximate location of the proposed Fairbury Park & Pool Study project is depicted on the Site Location Plan included in *Appendix A*.

A.3. PROJECT INFORMATION

The design team for the Fairbury Park & Pool Study is considering four site concepts. These site concepts could include a new bathhouse, a new 12-foot pool with a slide, improvements to the existing pool, a new parking lot, new mechanical room, and a new splash pad.

The four concepts provided by **Olsson** consist of either improvements to the existing pool or the construction of a new 12-foot pool. Depending on which concept is selected, the new 12-foot deep pool could be oriented in a north/south or east/west direction. The new bathhouse may be located at its current location or to the east of the existing swimming pool. A new parking lot could also be constructed to the north of the existing pool. The approximate location of the proposed construction area is depicted on the Boring Location Map included in *Appendix A*.

The finished floor and deck elevations for the proposed bathhouse, splash pad, and pool were not available at the time of this preliminary report. Topographic information for the site was obtained from **Olsson**. Based on the available topographic information, the soil test borings ranged from a high elevation of 1316.0 feet to a low elevation of 1315.5 feet. We have assumed a maximum structural fill depth of up to 2.0 feet and minimal excavation (less than 1 foot) for the project. Excavations of up to 12 feet will be needed to achieve the proposed bottom depth of the new pool.

At the time of this exploration, specific structural design loads were not provided; however, based on our experience with similar construction, **Olsson** anticipates that structural loads for the bath house to not exceed 30 kips and 3.0 kips per lineal foot for maximum and continuous wall loads, respectively.

B. EXPLORATORY AND TEST PROCEDURES

B.1. FIELD EXPLORATION

The field exploration program consisted of performing two soil test borings at the locations depicted on the Boring Location Map presented in *Appendix A*. The ground surface elevations at the boring locations were interpreted from the topographic map provided by **Olsson**. The surface elevations at the boring locations were rounded to the nearest half foot and are presented on the boring logs.

The soil test borings were extended to a depth of 15 feet below the existing ground surface with a truck-mounted drill rig using continuous-flight augers. Soil samples were obtained at selected intervals in the soil test borings. Soils samples designated as “U” samples on the boring logs were obtained in using Thin-Walled Tube Sampling techniques. Soil samples designed as “SS” samples were obtained during Penetration Test using a Split-Spoon Barrel sampler. Recovered samples were sealed in containers, labeled, and protected for transportation to the laboratory for testing.

B.2. LABORATORY TESTING

Descriptions of the soils encountered in the soil test borings were prepared using Visual-Manual Procedures for Descriptions and Identification of Soils. Laboratory tests were also performed to evaluate the engineering properties for the recovered soil samples. Moisture content tests and density were used to determine the existing moisture/density condition of the soils. Unconfined compression tests were used to help define the stress-strain characteristics and related shear strength of the cohesive soils. An Atterberg limits test was conducted to aid in the classification of the soils under the Unified Classification System and to indicate the shrink/swell potential of the soils. One consolidation test was conducted to determine the potential settlement and shrink/swell potential of the proposed pool improvements. One standard proctor test was completed to determine the maximum dry density and optimum moisture content of the existing fill soils. A summary of the laboratory test results is presented in *Appendix C*.

C. SUBSURFACE CONDITIONS

C.1. AREA GEOLOGY

The site lies in the stream terraces region of Nebraska at the interface of the Muir Silt Loam complex. These soils are known to be gently sloping, well drained, and have a moderately high to high permeability.

C.2. TEST BORINGS AND LABORATORY SUMMARY

The generalized subsurface profile for this site, in descending order, generally consisted of developed zone overlying existing fill and alluvial soils. Specific soil descriptions are noted in more detail on the Soil Test Boring Logs in *Appendix B*.

Developed Zone

A developed zone with approximately 3.0 inches of topsoil was encountered in each of the soil test borings, which consisted of varying amounts of organics and roots. Organic material is typically considered unsuitable for structural support or for use as structural fill due to its high organic content. It should be noted that the developed zone encountered in the soil test borings is to be stripped and stockpiled outside of the construction area prior to the placement of structural fill.

Existing Fill

Existing fill was encountered each of the soil test borings and extended to depths ranging from 2.0 to 3.5 feet below the existing ground surface. Soils identified as fill were generally firm, light to dark brown, dry to moist to moist, mostly silty lean clay with varying amounts of fine sand. Laboratory tests on recovered samples from this stratum depicted a moisture content ranging from 13.4 to 17.8 percent and dry densities ranging from 88.0 to 91.4 pounds per cubic foot (pcf). An Atterberg limits test performed on a bulk sample of the fill material indicated a liquid limit of 31 and a plasticity index of 13. A standard proctor test performed on a bulk sample from this stratum depicted a maximum dry density of 108.7 pcf at an optimum moisture content of 16.3 percent.

Alluvium

Alluvium was encountered in each of the soil test borings and extended to the base of the soil test borings. Soils identified as alluvium were generally soft to stiff, greyish brown, moist to wet, mostly silty lean clay with varying amounts of fine to medium sand, iron staining, and manganese. Laboratory tests on recovered samples from this stratum depicted a moisture content ranging from 20.8 to 26.1 percent, dry densities ranging from 88.4 to 103.2 pcf, and an unconfined

compressive strength value range of 0.8 to 1.1 tons per square foot (tsf). Standard penetration resistance “N” values obtained in the alluvial soils ranged from 3 to 7 blows per foot (bpf). The Standard penetration resistance “N” values and unconfined compressive strength values indicated a soft to stiff consistency for the alluvium material.

C.3. GROUNDWATER SUMMARY

Groundwater was encountered in the soil test borings as summarized in Table 1. The dates, conditions and depths of the groundwater table are noted in more detail on the Soil Test Boring Logs in *Appendix B*. Groundwater levels will fluctuate depending on seasonal variations of precipitation and other factors that may occur at higher elevations at some time in the future. **Section D.5** of this report will address any site drainage concerns with water elevations in this region.

TABLE 1
GROUNDWATER MEASUREMENTS

Boring No.	Groundwater Depth During Drilling (Feet)	Groundwater Elevation During Drilling	Groundwater Depth Immediately After Drilling (Feet)	Groundwater Elevation Immediately After Drilling	Groundwater Depth 6 Hours After Drilling (Feet)	Groundwater Elevation 6 Hours After Drilling
B-1	13.0	1303.0	11.0	1305.0	10.3	1305.7
B-2	12.5	1303.0	10.2	1305.3	10.4	1305.1

D. GENERAL SITE PREPARATION

D.1. GENERAL SITE CONDITIONS/SITE PREPARATION

There are several geotechnical related aspects of the site that should be considered in design and construction. These aspects are summarized as follows and will be discussed in more detail in later sections of the report.

- At the time of drilling, the site for the proposed project site was covered with topsoil (typically 3 inches thick), gravel parking lot, vegetation, and roots. Organic material is typically considered unsuitable for structural support or for use as structural fill.
- Groundwater was encountered in both soil test boring at a depth ranging from 10.3 to 10.4 feet below the existing ground surface at the time of this investigation. Site development and building plans should take into consideration the anticipated depth to groundwater when considering the grading operations, FFE, and pool depth. Please see **Section D.3** of this report for further recommendations related to the groundwater.
- The existing fill soils were found to be variable in density and moisture content and do not appear suitable for support for the proposed bathhouse, pool, and will need to be overexcavated. The overexcavation depth of the existing fill would likely need to extend approximately 2.0 to 3.5 feet below existing ground surface.
- High moisture content subgrade soils maybe encountered during excavation operations because of the relatively shallow depth to groundwater. Heavy scrapers and rubber tire construction equipment will apply high amounts of ground pressure which could result in pumping and rutting in the underlying soils. Continuous traffic in localized areas will also increase the chances of pumping and rutting. Consideration should be given to using a backhoe (or similar) equipment to excavate the final 3 feet in pool areas. Stabilization measures may be needed in the pool excavation, which could include placement of geogrid and aggregate.
- Areas to receive new structural fill should be proofrolled with a loaded tandem axle dump truck, loaded scarper, or similar rubber-tired equipment weighing at least 15 tons (with an equivalent axle load of up to 9 tons). Proofrolling operations should be observed and documented by an **Olsson** field representative. Unstable and unsuitable soils which are revealed by proofrolling and which cannot be adequately densified in-place should be documented, removed to a stable depth, undisturbed natural soils, and replaced with compacted structural fill placed under the direction of the geotechnical engineer.
- Based upon Atterberg limits results and site observations, the existing fill and alluvial soils appear suitable for re-use as structural fill.

D.2. PRELIMINARY STRUCTURAL FILL

During construction, structural fill soils placed within building and pavement areas should have a liquid limit of less than 45 and a plasticity index of less than 25. The suitability of on-site soils for use as structural fill should be approved by an on-site representative of **Olsson** through Atterberg limits testing completed during construction.

In addition to the plasticity characteristics, the fill soils should also be relatively free of organic materials (less than about two hundredths by weight), other deleterious material and should not contain particle sizes larger than three inches. Imported fill material should be tested prior to placement at the site to verify it complies with the criteria stated in this section of the report. Samples of the proposed imported structural fill should be submitted at least three days prior to placement so the necessary laboratory tests can be performed.

We recommend that structural fill and backfill be compacted in accordance with the criteria stated in Table 2. A qualified field representative should periodically observe fill placement operations and perform field density tests concurrently to indicate if the specified compaction is being achieved.

TABLE 2
STRUCTURAL FILL PLACEMENT GUIDELINES

Areas of Fill Placement	Compaction Recommendation (ASTM D698-Standard Proctor)	Moisture Content (Percent of Optimum)
Granular Cushion Beneath Floor Slab (If used)	98%*	As necessary to obtain density
Floor Slab/Soil Subgrade – 1' below the base of the granular cushion (if used) or Floor Slab	98%	-1 to +3 percent
Structural fill placed below the Floor Slab Subgrade and within 5 feet of the perimeter of the building pad	98%	-1 to +3 percent
Utility Trenches - Within building area	98%	-1 to +3 percent
Beneath Landscaped/Grass Areas	92%	As necessary to obtain density

The moisture content of suitable borrow soils should generally be between the specified ranges in Table 2. More stringent moisture limits may be necessary with certain soils. Adjustment of moisture content may be necessary to allow compaction in accordance with project specifications. Dependent on the percentage of fines, the clean free-draining aggregates utilized in the granular cushion beneath the floor slab could alternatively be consolidated by means of a vibratory compactor to at least 70% “relative density”, as determined in accordance with ASTM D 4253

(Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table) and D 4254 (Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculations of Relative Density).

D.3. PRELIMINARY DRAINAGE AND GROUNDWATER CONSIDERATIONS

Groundwater was encountered in the soil test borings, as stated in Table 1, and could affect pool excavation and construction. We note that groundwater levels will fluctuate depending on seasonal variations of precipitations and other factors that were not evident at the time of drilling and may occur at higher elevations in the future which could potentially impact construction operations.

Ultimately, dewatering methods and techniques (if required) will need to be determined by the contractor based on previous experience with similar soils in this area. In addition, due to the spacing and scarcity of the soil test borings, the groundwater data represents a very small sampling of the actual groundwater across the site. Dewatering methods could involve sump pumps, well points, or a combination of both. The contractor should utilize previous experience in this area to determine the most efficient and cost effective method to dewater. It will be critical that the method utilized for dealing with the on-site groundwater be sufficient to provide dry excavations.

Note: The structural engineer or pool designer should consider uplift forces acting on the base of the pool as part of their design.

In general, water should not be allowed to collect near the surface of the foundation or floor slab areas of the structures during or after construction. Since soils generally tend to soften when exposed to free water, provisions should be made to remove seepage water from excavations, should it occur. In addition, undercut or excavated areas should be sloped toward one corner to facilitate the collection and removal of rainwater or surface runoff.

The site should also be graded to avoid water flows, concentrations, or pools behind grade retaining walls. If swales are designed at the top of the walls, proper line and slope should be considered to avoid any moisture infiltration behind the walls. Special attention to sources of storm water from building roofs, gutter downspouts, and paved areas draining to one point is needed.

Additionally, in order to minimize concerns related to improper drainage away from the foundations that tend to soften subgrade soils when exposed to water; we provide the following general recommendations:

- Site grading should provide for efficient drainage of rainfall away from building and pool areas, with a minimum slope of 2% for pavement areas and 5% for grass or landscaped areas.
- Roof run-off should be collected and transferred directly to the storm sewer system, if possible, or to a location well away from the structures. Conventional downspout drainage leading to splash blocks, though not as desirable, may be used.
- Install clay plugs in each utility trench for utility line penetrations entering the building pad. The compacted clay plug should extend a minimum distance of five feet out from the building exterior.
- External hose connections should incorporate splash blocks to prevent localized accidental flooding of foundation soils. External hose connections should have cutoff valves inside the building to prevent accidental or unauthorized use of external hose connections.
- Building maintenance personnel should be informed of the potential problems associated with watering in close proximity to the building and pool. Excessive watering of shrubs or lawns near building and pool should be avoided. Placement of deep-rooted or water-intensive shrubs near buildings and pool also should be avoided.

E. PRELIMINARY FOUNDATION DESIGN

E.1. PRELIMINARY SHALLOW FOUNDATION DESIGN

Based on the results of the soil test borings, laboratory testing and our engineering evaluation, it is our preliminary opinion that the subsurface conditions are suitable for supporting the bathhouse on a conventional shallow foundation system. Assuming the recommendations in **Section D** of this report are followed, the interior and exterior foundations will likely be supported on structural fill and alluvial soils. Based on the above soil properties and assuming the recommendations above are followed, the bath house could be designed for a preliminary maximum net allowable soil bearing pressure ranging from 1,500 to 2,000 psf.

The net allowable bearing pressure refers to the bearing pressure at foundation level in excess of the surrounding overburden pressure. Footings should have minimum dimensions in accordance with local building codes. Exterior footings and footings in unheated areas should bear at a minimum depth of 3½ feet below the lowest adjacent final ground surface. It is recommended that interior footings in heated areas bear at a depth as shallow as possible below the lowest adjacent final ground surface. The analyses for interior and exterior footings utilized bearing depths of 2 and 3½ feet, respectively, below the finished floor elevation.

Provided the recommendations contained in this report are followed, total post-construction settlements are anticipated to be less than 1.0 inch with differential settlements anticipated to be less than 0.5 inches for the structure. To reduce effects of differential settlement, a floating floor slab independent from the wall and column loads with expansion joints will be critical in minimizing the potential cracking that can occur along and around the proposed foundation system. Floor slab control joints should be used to reduce damage due to shrinkage cracks.

F. LIMITATIONS

F.1. REPORT LIMITATIONS

The preliminary conclusions and recommendations presented in this report are based on the information available regarding the proposed construction, the results obtained from our soil test borings and sampling procedures, the results of the laboratory testing program, and our experience with similar projects. The soil test borings represent a very small statistical sampling of subsurface soils and conditions may be encountered during construction that are substantially different from those indicated by the soil test borings. In these instances, adjustments to design and construction may be necessary.

This preliminary geotechnical exploration is based on the site location and information provided to **Olsson** and our understanding of the project as noted in this report. Changes in the location or design of the proposed project could significantly affect the conclusions and recommendations presented in this geotechnical report. **Olsson** should be contacted in the event of such changes to determine if the recommendations of this report remain appropriate for the revised site design.

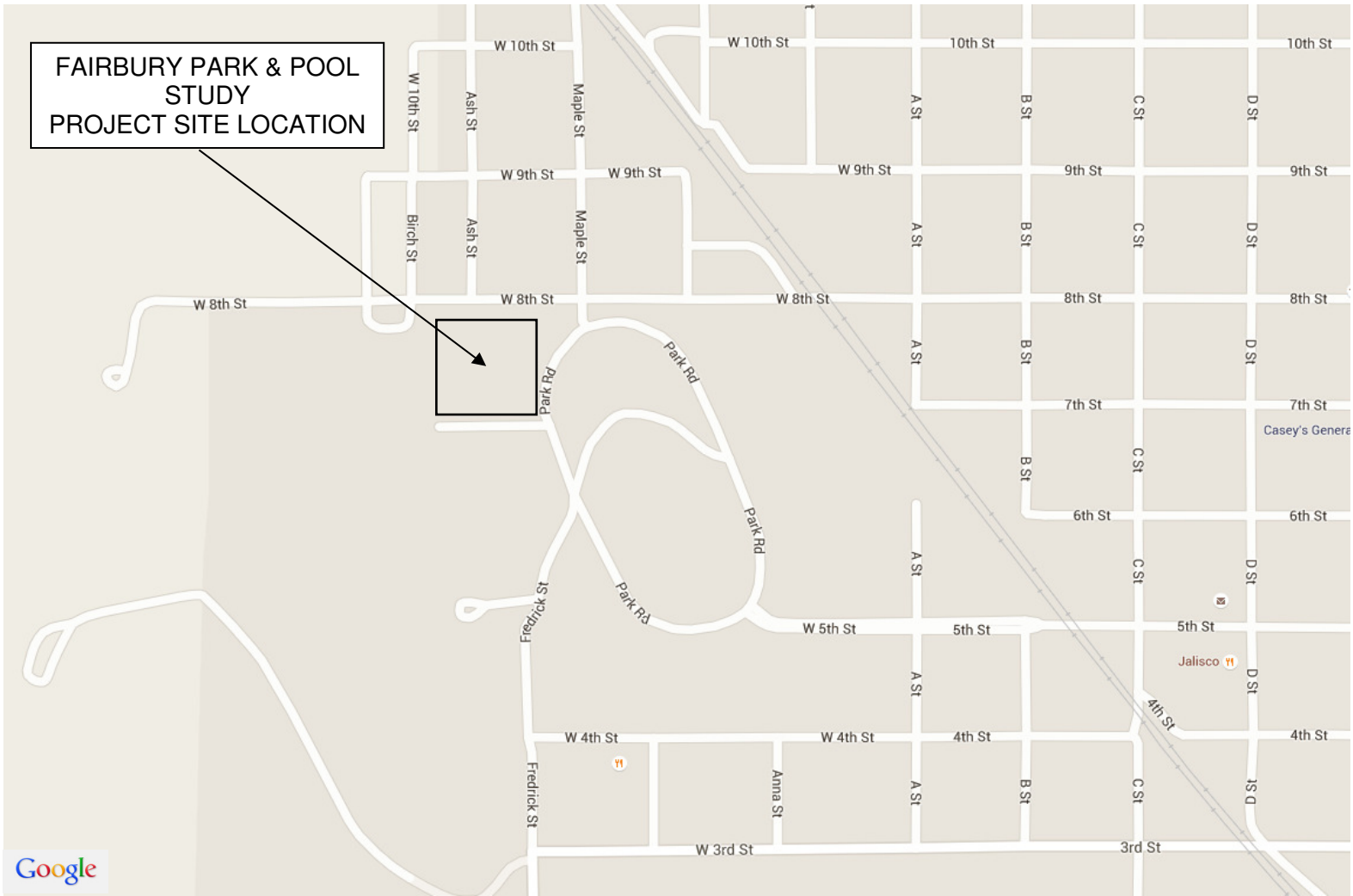
Additional soil test borings, laboratory testing, and engineering analysis will be necessary to provide final design recommendations. Grading operations and depths of structural fill have significant effects on the final bearing capacities.

Soil stratification, as shown on the Boring Logs, represent soil conditions at the boring locations; however, variations may occur between or around the boring locations. The lines of demarcation represent the approximate boundary between soil types but the transition may be more gradual.

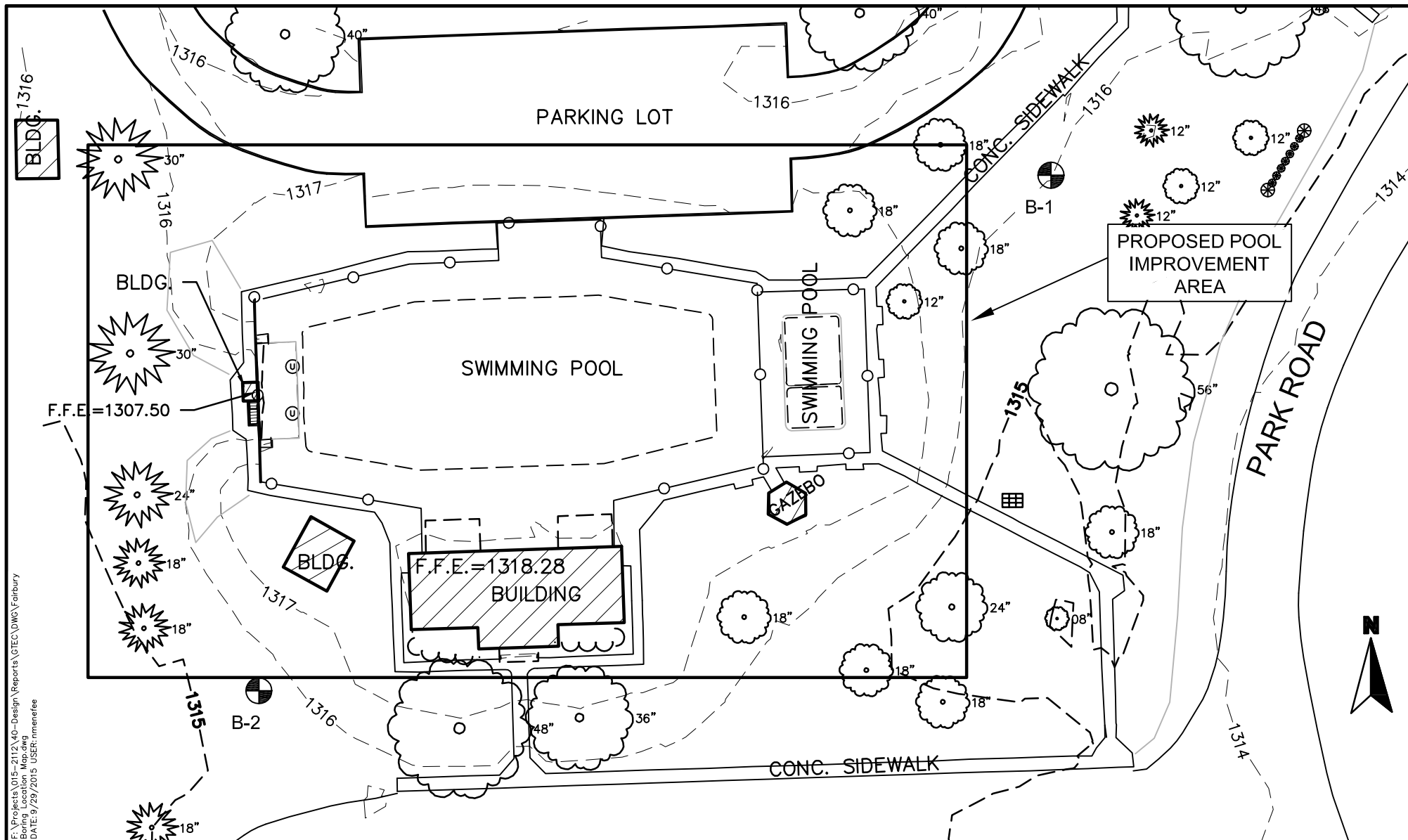
This report was prepared by a Professional Engineer registered in the State of Nebraska with the firm **Olsson Associates (Olsson)**. The conclusions and recommendations contained herein are based on generally accepted, professional, geotechnical engineering practice at the time of this report within this geographic area. No other warranty is expressed or implied. This report has been prepared for the exclusive use of the **City of Fairbury, Nebraska** with specific application to the proposed project.

APPENDIX A




**Site Location Plan
Boring Location Map**



**SITE LOCATION PLAN
FAIRBURY PARK & POOL STUDY
FAIRBURY, NEBRASKA
OA PROJECT NO. 015-2112**



E:\Projects\015-2112\40-Design\Reports\GTEC\DWG\Fairbury
 DATE: 9/29/2015 USER: mrenefee

LEGEND  SOIL BORING LOCATION		 0 25 50 100 SCALE IN FEET		 OLSSON [®] ASSOCIATES 601 P Street, Suite 200 P.O. Box 84608 Lincoln, NE 68508 TEL 402.474.6311 FAX 402.474.5160 www.olssonassociates.com	
PROJECT: 015-2112		BORING LOCATION MAP FAIRBURY, NEBRASKA			
DATE: 9/28/15	DRAWN BY: NAM				

APPENDIX B

Symbols & Nomenclature

Boring Logs

SYMBOLS AND NOMENCLATURE

DRILLING NOTES

DRILLING AND SAMPLING SYMBOLS

SS: Split-Spoon Sample (1.375" ID, 2.0" OD)	HSA: Hollow Stem Auger	NE: Not Encountered
U: Thin-Walled Tube Sample (3.0" OD)	CFA: Continuous Flight Auger	NP: Not Performed
CS: Continuous Sample	HA: Hand Auger	NA: Not Applicable
BS: Bulk Sample	CPT: Cone Penetration Test	% Rec: Percent of Recovery
MC: Modified California Sampler	WB: Wash Bore	WD: While Drilling
GB: Grab Sample	FT: Fish Tail Bit	IAD: Immediately After Drilling
SPT: Standard Penetration Test Blows per 6.0"	RB: Rock Bit	AD: After Drilling
		CI: Cave-In

DRILLING PROCEDURES

Soil samples designated as "U" samples on the boring logs were obtained in using Thin-Walled Tube Sampling techniques. Soil samples designated as "SS" samples were obtained during Penetration Test using a Split-Spoon Barrel sampler. The standard penetration resistance 'N' value is the number of blows of a 140 pound hammer falling 30 inches to drive the Split-Spoon sampler one foot. Soil samples designated as "MC" were obtained in using Thick-Walled, Ring-Lined, Split-Barrel Drive sampling techniques. Recovered samples were sealed in containers, labeled, and protected for transportation to the laboratory for testing.

WATER LEVEL MEASUREMENTS

Water levels indicated on the boring logs are levels measured in the borings at the times indicated. In relatively high permeable materials, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels is not possible with only short-term observations.

SOIL PROPERTIES & DESCRIPTIONS

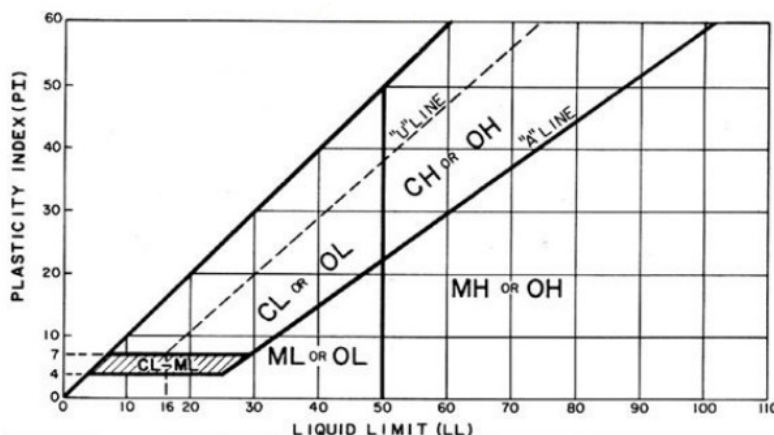
Descriptions of the soils encountered in the soil test borings were prepared using Visual-Manual Procedures for Descriptions and Identification of Soils.

PARTICLE SIZE

Boulders	12 in. +	Coarse Sand	4.75mm-2.0mm	Silt	0.075mm-0.005mm
Cobbles	12 in.-3 in.	Medium Sand	2.0mm-0.425mm	Clay	<0.005mm
Gravel	3 in.-4.75mm	Fine Sand	0.425mm-0.075mm		

COHESIVE SOILS		COHESIONLESS SOILS		COMPONENT %	
Consistency	Unconfined Compressive Strength (Qu) (tsf)	Relative Density	'N' Value	Description	Percent (%)
Very Soft	<0.25	Very Loose	0 - 3	Trace	<5
Soft	0.25 - 0.5	Loose	4 - 9	Few	5 - 10
Firm	0.5 - 1.0	Medium Dense	10 - 29	Little	15 - 25
Stiff	1.0 - 2.0	Dense	30 - 49	Some	30 - 45
Very Stiff	2.0 - 4.0	Very Dense	≥ 50	Mostly	50 - 100
Hard	> 4.0				

PLASTICITY CHART



ROCK QUALITY DESIGNATION (RQD)

Description	RQD (%)
Very Poor	0 - 25
Poor	25 - 50
Fair	50 - 75
Good	75 - 90
Excellent	90 - 100



PROJECT NAME					CLIENT									
Fairbury Park & Pool Study					City of Fairbury, NE									
PROJECT NUMBER					LOCATION									
015-2112					Fairbury, Nebraska									
ELEVATION (ft)	MATERIAL DESCRIPTION				GRAPHIC LOG	DEPTH (ft)	SAMPLE TYPE NUMBER	CLASSIFICATION (USCS)	BLOWS/6" N-VALUE	UNC. STR. (tsf)	MOISTURE (%)	DRY DENSITY (pcf)	LL/PI (%)	ADDITIONAL DATA/ REMARKS
	APPROX. SURFACE ELEV. (ft): 1316.0					0								
1315	DEVELOPED ZONE FILL													
	Silty lean clay (CL/ML) Firm, dark brown, moist, mostly silty lean clay, trace fine sand						U 1				17.8	91.4		
	ALLUVIUM													
	Silty lean clay (CL/ML) Soft, brown, moist, mostly silty lean clay, trace fine sand					5	SS 2		1-2-1 N=3					
1310	Silty lean clay (CL/ML) Stiff, brown with grey, moist, mostly silty lean clay, few fine sand						U 3			1.1	20.8	103.2		
	Silty lean clay (CL/ML) Firm, brown with grey, very moist, mostly silty lean clay, few fine sand					10	SS 4		3-3-4 N=7					
1305														
	Silty lean clay (CL/ML) Stiff, light greyish brown, wet, mostly silty lean clay, little fine sand					15	U 5				26.1			P-200 = 85.7%

WATER LEVEL OBSERVATIONS			OLSSON ASSOCIATES 601 P STREET, SUITE 200 LINCOLN, NEBRASKA 68508			STARTED:	9/1/15	FINISHED:	9/1/15
WD	▽	13.0 ft				DRILL CO.:	OLSSON	DRILL RIG:	CME 45C
IAD	▼	11.0 ft after 0 Hrs				DRILLER:	JSR	LOGGED BY:	CAH
AD	▽	10.3ft after 6Hrs				METHOD:	CONTINUOUS FLIGHT AUGER		

PROJECT NAME				CLIENT								
Fairbury Park & Pool Study				City of Fairbury, NE								
PROJECT NUMBER				LOCATION								
015-2112				Fairbury, Nebraska								
ELEVATION (ft)	<div><div></div> Shelby Tube</div> <div><div></div> Split Spoon</div> MATERIAL DESCRIPTION		GRAPHIC LOG	DEPTH (ft)	SAMPLE TYPE NUMBER	CLASSIFICATION (USCS)	BLOWS/6" N-VALUE	UNC. STR. (tsf)	MOISTURE (%)	DRY DENSITY (pcf)	LL/PI (%)	ADDITIONAL DATA/ REMARKS
	APPROX. SURFACE ELEV. (ft): 1315.5			0								
1315	DEVELOPED ZONE FILL Silty lean clay (CL/ML) Firm, light to dark brown, dry to moist, mostly silty lean clay, few fine sand		<div>0.3'</div>		U 1				13.4	88.0		
			<div>3.5'</div>		U 2			1.1	21.5	96.7		
1310	ALLUVIUM Lean clay (CL) Stiff, brown with grey, moist, mostly lean clay, few silt, trace fine sand, iron staining, manganese		<div>6.0'</div>		U 3				21.1	90.6		
			<div>8.5'</div>		SS 4		3-3-4 N=7					
1305	<div>▼</div> <div>▽</div> Silty lean clay (CL/ML) Firm, greyish brown, very moist, mostly silty lean clay, trace fine sand			10								
					U 5			0.8	22.1	101.7		
			<div>15.0'</div>	15								
BASE OF BORING AT 15.0 FEET												

WATER LEVEL OBSERVATIONS			OLSSON ASSOCIATES 601 P STREET, SUITE 200 LINCOLN, NEBRASKA 68508		STARTED: 9/1/15	FINISHED: 9/1/15
WD	▽ 12.5 ft				DRILL CO.: OLSSON	DRILL RIG: CME 45C
IAD	▽ 10.2 ft after 0 Hrs				DRILLER: JSR	LOGGED BY: CAH
AD	▽ 10.4ft after 6Hrs				METHOD: CONTINUOUS FLIGHT AUGER	

APPENDIX C

Summary of Laboratory Test Results

PROJECT NAME: Fairbury Park & Pool Study

CLIENT: City of Fairbury, NE

PROJECT NUMBER: 015-2112

PROJECT LOCATION: Fairbury, Nebraska

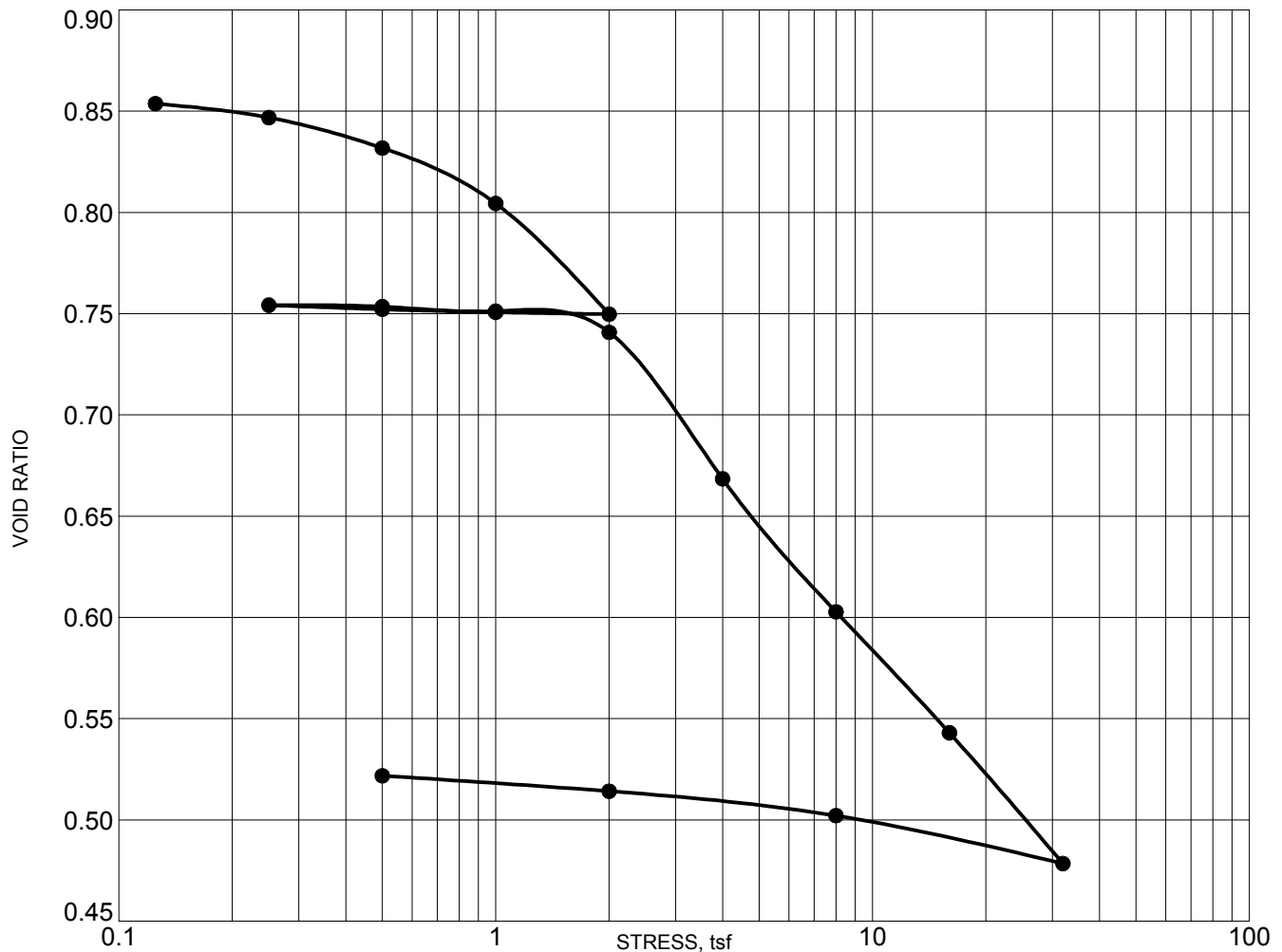
BORING NUMBER	SAMPLE I.D.	SAMPLE DEPTH (ft)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	SATURATION (%)	UNCONFINED STRENGTH (tsf)	STRAIN (%)	ATTERBERG LIMITS			P-200	USCS CLASS.
									LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX		
B-1	U-1	1.0 - 2.5'	17.8	91.4	0.843	56.9							
B-1	U-3	6.0 - 7.5'	20.8	103.2	0.633	88.7	1.1	3.4					
B-1	U-5	13.5 - 15.0'	26.1									85.7	
B-2	U-1	1.0 - 2.5'	13.4	88.0	0.915	39.6							
B-2	U-2	3.5 - 5.0'	21.5	96.7	0.744	78.2	1.1	2.5					
B-2	U-3	6.0 - 7.5'	21.1	90.6	0.861	66.3							
B-2	U-5	13.5 - 15.0'	22.1	101.7	0.658	90.8	0.8	2.5					

PROJECT NAME: Fairbury Park & Pool Study

CLIENT: City of Fairbury, NE

PROJECT NUMBER: 015-2112

PROJECT LOCATION: Fairbury, Nebraska



Boring No: B-2 Initial Water Content (%): 21.1 Est. Preconsolidated Stress (tsf): 0.9

Sample ID: U-3 Final Water Content (%): 19.4 Laboratory Water Type: Distilled Water

Sample Depth: 6.0 - 7.5' Initial Dry Density (pcf): 90.6 Test Procedure Method: NA

Start Date: 9/26/15 Initial Void Ratio: 0.860 Interpretation Procedure: NA

Technician: DDK Final Void Ratio: 0.520 Stress at Inundation (psf): 50.0

Apparatus: LT II - 66 Initial Degree of Saturation (%): 66.6 Specimen Trimming Method: Turntable

Specific Gravity: 2.7 Final Degree of Saturation (%): 99.8

ATTERBERG LIMITS

LL PL PI Classification

Sample Description: Alluvium: Light greyish brown, Silty lean clay
(CL/ML)

Notes:

PROJECT NAME: Fairbury Park & Pool Study

CLIENT: City of Fairbury, NE

PROJECT NUMBER: 015-2112

PROJECT LOCATION: Fairbury, Nebraska

Date: 9/25/15

Type of Test: 698D

Sample Identification: Bulk Sample: B-2 (1-3.5')

Sample Description: Fill: Light to dark brown, Silty lean clay
(CL/ML)

TEST RESULTS

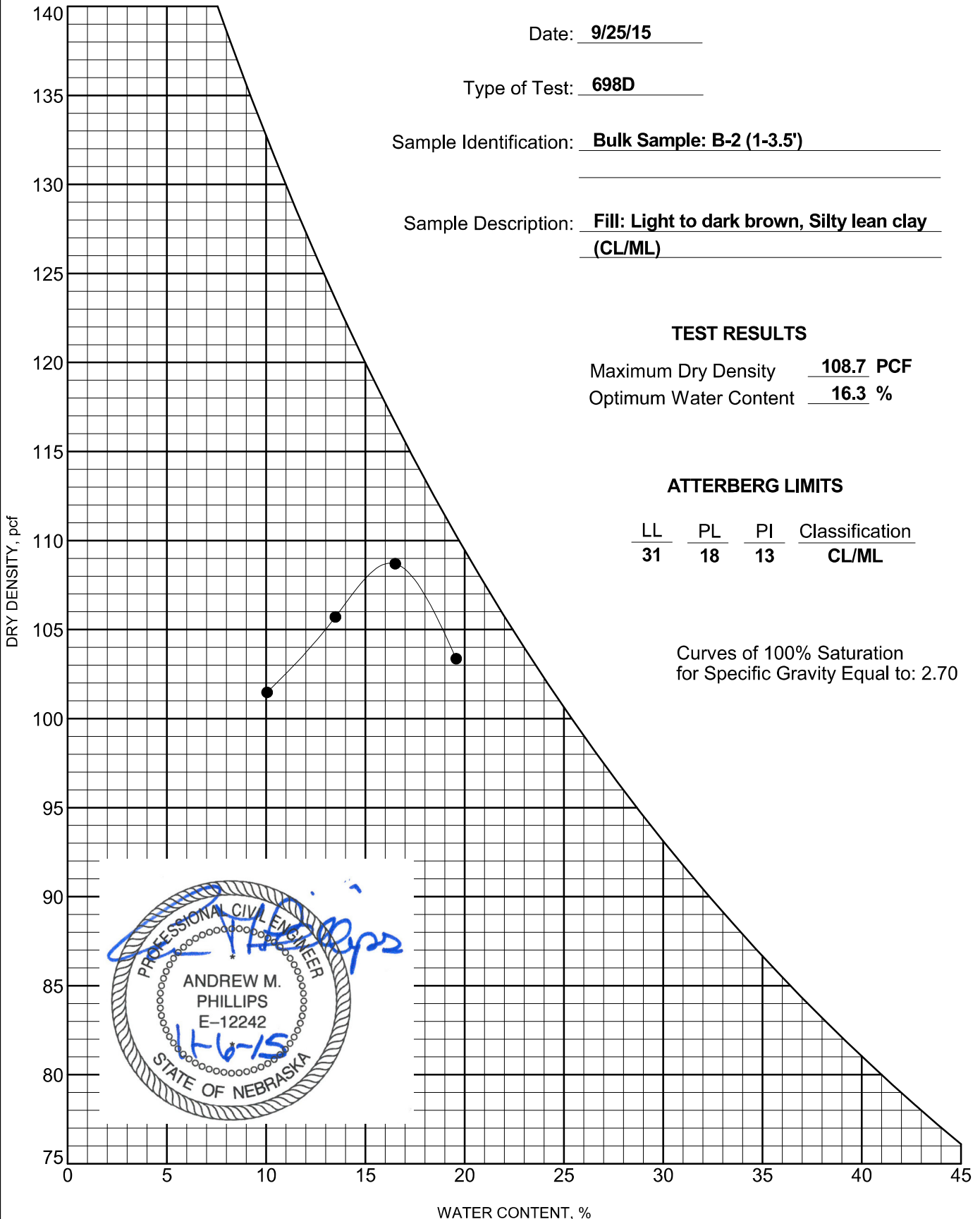
Maximum Dry Density 108.7 PCF

Optimum Water Content 16.3 %

ATTERBERG LIMITS

LL	PL	PI	Classification
31	18	13	CL/ML

Curves of 100% Saturation
for Specific Gravity Equal to: 2.70



Appendix E

PRELIMINARY DRAINAGE STUDY

City of Fairbury Jefferson County, Nebraska

Prepared for:
City of Fairbury
Nebraska

Prepared by:
Olsson Associates
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Lincoln, NE 68508
402-474-6311
402-474-5160

OA Project No. 010-0890



September 2010

The following preliminary drainage report is part of a CDBG project.

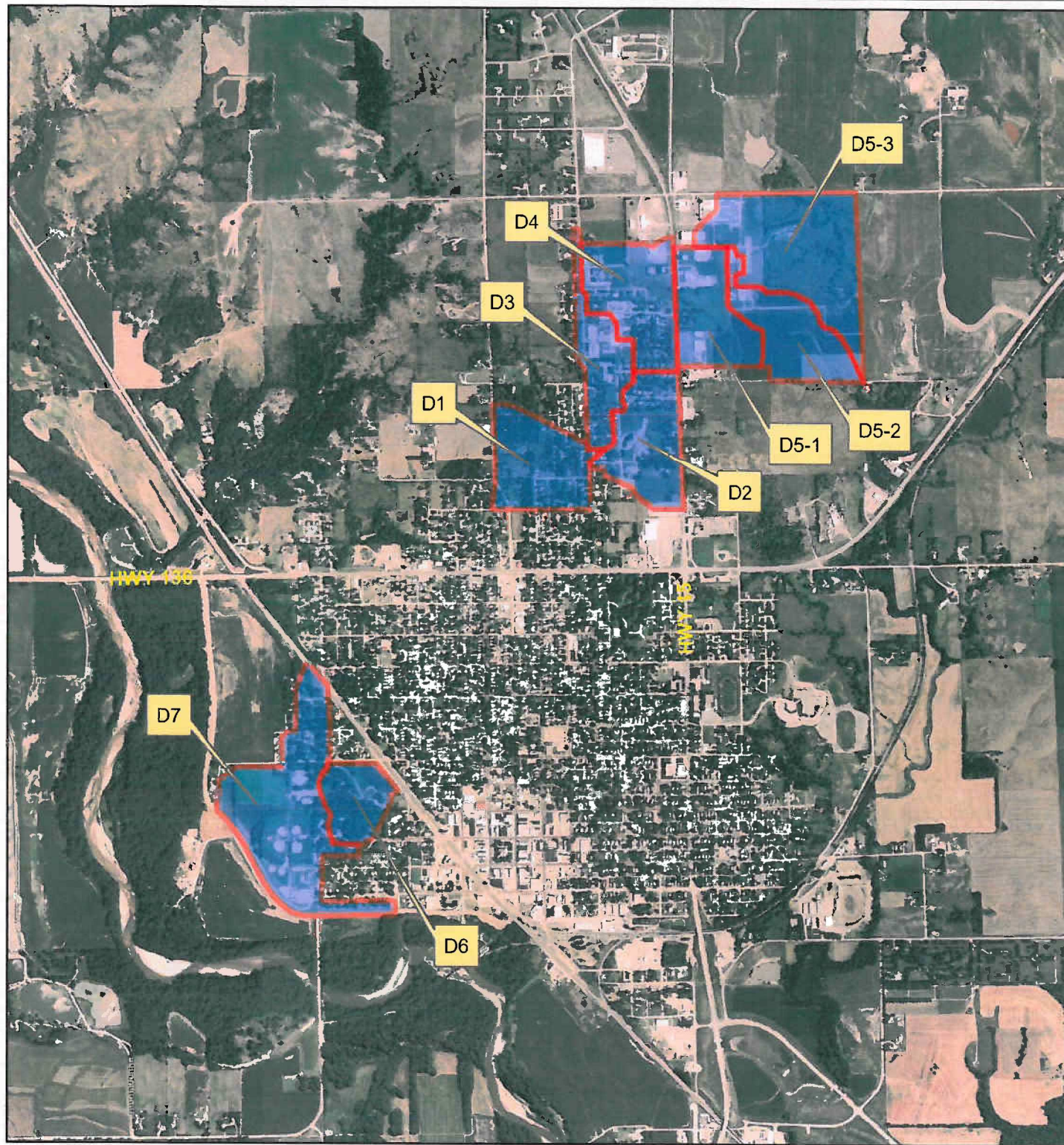
The City of Fairbury experiences frequent flooding, both from inadequate and dilapidated urban drainage systems and from flooding occurring along the Little Blue River. Frequent flooding occurs in numerous areas, located throughout the City.

Drainage in Fairbury generally flows from north to south. Runoff through town is conveyed southward by a series of storm sewer pipes and box culverts. These pipes and storm sewers were constructed at various times and many are in a state of disrepair. Several segments of the storm sewer system have failed in the past and emergency repairs were completed, including after the storms in May and June of 2008. The storm sewer system does not appear to be adequate to drain flows from even a moderate storm and modest rainfalls can result in storm sewer surcharging, street flooding, and even flooding of structures. Flooding has also occurred at the outlet of the storm sewer systems, on the northeast side of the railroad tracks. A comprehensive evaluation of the drainage systems through town, including recommendations for improvements, is needed.

Fairbury is subject to flooding from the Little Blue River on the west and south sides of town and Brawner Creek on the east and southeast sides of town. The Little Blue River flows from northwest to southeast and the southwest side of town is protected by a levee. These facilities, including Highway 136, Frederick Street, Highway 15, and the City Park at the southwest corner of town, are subject to flooding from one or both sources. An evaluation of the floodplain, including recommendations for flood protection measures or improvements, is needed.

Each drainage area focuses on areas which were pre-determined by the City of Fairbury. Each area was reviewed to develop a site description, location map, hydrologic analysis, hydraulic analysis, recommendations, preliminary cost analysis, and photo log. Hydrologic and hydraulic data can be found in the Appendix at the end of the report.

The following page shows an overall map of the drainage study, with each area noted.



Scale: 1"=2000'

Legend

 Drainage Area

PROJECT: 010-0890

DRAWN BY: EJB

DATE: SEPTEMBER 2010

FAIRBURY DRAINAGE STUDY SITE MAP

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FIGURE

A

Preliminary Drainage Study City of Fairbury

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SECTION 5

Subwatershed D6



Scale: 1"=600'

Legend

- Storm Sewer
- Drainage Area

PROJECT: 010-0890

DRAWN BY: EJB

DATE: SEPTEMBER 2010

FAIRBURY DRAINAGE STUDY SUBWATERSHED D6

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FIGURE

5



Scale: 1"=600'

Legend

- Proposed Inlets/Manhole
- Proposed Storm Sewer
- Existing Storm Sewer

PROJECT: 010-0890

DRAWN BY: EJB

DATE: SEPTEMBER 2010

PROPOSED STORM SEWER CONCEPTUAL PLAN CITY PARK

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EXHIBIT

5.1

D6: CITY PARK EAST

This area is located in the southwest part of Fairbury, west of 'A' Street between W. 8th Street and W. 5th Street. The park consists of a ball field, playgrounds, recreational facility and open space. There is an existing inlet at the southeast part of the park, which is the only inlet collecting runoff in Subwatershed D6. The inlet connects to the City of Fairbury storm sewer system, which eventually drains to an existing 8 foot x 6 foot arch pipe between 'A' Street and 'B' Street on West 5th Street. This area lies within a Zone X on the Flood Insurance Rate Map, Panel # 3101200005C which is determined to be outside the 100- and 500-year floodplains.

HYDROLOGIC ANALYSIS

This section provides a summary of the hydrologic conditions and drainage patterns developed for this site. Rainfall information for the 100-, 50-, 10-, and 2-year frequency storm events were used. Rainfall amounts were 6.80 inches, 6.10 inches, 4.70 inches, and 3.00 inches respectively for the storm events. Preliminary discharges were computed using the USDA Soil Conservation Service (previously SCS, now known as NRCS) Technical Release 55 (TR-55) equations. Soils in Subwatershed D6 consist of mainly Type B. Type B soils have a moderately high infiltration rate. A summary of the information obtained using the TR-55 methodology and equations are found in Table 5.1 below.

Table 5.1: City Park East

Summary of Hydrologic Elements determined using TR-55							
Subwatershed	Drainage Area (Acres)	Curve Number	Time of Concentration (T_c) (min)	Q_2 (cfs)	Q_{10} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)
D6	22	76	21	20	40	70	90

HYDRAULIC ANALYSIS

Drainage area D6 has a peak flow rate of 20 cfs in a 2-year storm event. Based on the soils in the area, the runoff most likely infiltrates into the ground or evaporates. The existing curb inlet at the southeast corner of the park, does not have the capacity to handle a 2-year storm event. The existing 15 inch storm sewer has a capacity of 4 - 6 cfs. Based on information from the City of Fairbury, this pipe experiences the effects of backwater from the downstream storm sewer system, which backs water up until it spills out of the curb inlet during larger storms. If the arch pipe is flowing full, the 15 inch pipe cannot discharge the amount of water that is collected. When this occurs, the runoff contained in the park area ponds until the storm sewers downstream are not flowing as full.

RECOMMENDATIONS

One solution to remove storm water from this area is to add multiple storm sewer inlets around the loop road. These inlets would be connected with pipes ranging in size from 15 inch to 36 inch. The pipes would outlet into a drainage swale on the south side of the park or may need to be piped along the swale, depending on actual topographic survey information gathered during final design. The swale would then be picked up with a new storm sewer pipe and flared end section. The storm sewer pipe would run south along the west side Frederick Street, parallel to the existing storm sewer pipe. This area is extremely flat and pipes would need to be constructed at a flat slope. Starting at the storm sewer outfall elevation through the levee and working up gradient to the park, the pipe slopes would have to be 0.25% in order to keep proper cover over the pipes. This is very similar to the existing storm sewer system in Frederick Street which also has extremely flat slopes. Using a pipe slope of 0.25%, this would have to be a 36 inch diameter reinforced concrete pipe. This route would be selected to minimize pavement removal and replacement and avoid existing utility lines. This system would not only handle the 2-year storm event, but this new drainage system would allow for the area to drain down, even in larger storm events. A conceptual layout of inlets and storm sewer has been created for this report (See exhibit 6.1)

Another option is to remove the existing storm sewer system and rebuild it to handle the current pipe capacity (40cfs) plus the D6 runoff. The new system would require a minimum of a 54 inch pipe. This option would be more costly due to the need to remove existing pipes, rebuild structures and replace more pavement.

By adding another storm sewer system, the levee would have to be modified to allow for another pipe penetration. This new 36 inch storm sewer would have to be built with a flap gate and possibly a sluice gate, to meet U.S. Army Corps of Engineers (USACOE) standards. When working on or near a levee, the USACOE requires that an analysis be completed to prove that the project has "no-adverse impact" on the levee system. This analysis would include geotechnical borings, a global stability analysis, underseepage and uplift analysis. The pipe would be designed to cut off future "piping" potential, where water tries to flow through the levee penetration by running along the pipe. A manhole for the new 36 inch storm sewer would be built at the toe of the levee and connected to the existing manhole that is utilized as a pumping well. This would allow the pump to operate for both storm sewer systems. This pump is currently used to discharge storm runoff over the levee, when the flap gates on the river side of the levee have been activated. Based on inspections of the existing storm sewer along Frederick Street, the inlets need to be cleaned out and maintained. This should be done in order to make sure that the system is functioning properly.

PERMITS REQUIRED

The USACOE does have jurisdiction over the Little Blue River, and must review any work done on or within 50 feet of the levee. If any work is to be done where drainage is discharged into the river, a section 404 permit is required. The construction of the proposed improvements will require some land disturbance and cause discharges of sediment into the drainage ditch downstream. Thus, the proposed improvements will require a National Pollution Discharge Elimination System (NPDES) Permit through the Nebraska Department of Environmental Quality (NDEQ).

PRELIMINARY COST ANALYSIS

2-Year Storm Event

Item	Unit	Quantity	Unit Price	Total
Mobilization	LS	1	\$5,000.00	\$5,000.00
Construction Staking	LS	1	\$3,000.00	\$3,000.00
36 inch RCP	LF	2,075	\$95.00	\$197,125.00
30 inch RCP	LF	942	\$75.00	\$70,650.00
18 inch RCP	LF	315	\$45.00	\$14,175.00
15 inch RCP	LF	315	\$32.00	\$10,080.00
Inlets with beehive grate	EA	5	\$2,500.00	\$12,500.00
Standard manhole	EA	3	\$5,000.00	\$15,000.00
Special manhole	EA	1	\$5,000.00	\$5,000.00
Remove existing curb inlet	EA	1	\$500.00	\$500.00
Remove existing inlet	EA	1	\$500.00	\$500.00
30 inch flapgate & sluice gate with headwall structure	EA	1	\$12,000	\$12,000.00
24 inch end section RCP	EA	2	\$250.00	\$500.00
Seeding and mulch	AC	1	\$3,000.00	\$3,000.00
Remove & replace concrete pavement	SY	120	\$50.00	\$6,000.00
Temporary construction entrance	EA	1	\$2,000.00	\$2,000.00
Gravel re-surfacing	TN	7	\$50.00	\$350.00
<i>Preliminary Construction Cost</i>				\$357,380.00
<i>Survey/Engineering/Bidding</i>				\$53,607.00
<i>30% Contingency</i>				\$107,214.00
<i>Corps of Engineers permitting</i>				\$10,000.00
Total Preliminary Cost				\$528,201.00

Note: A 30% contingency has been added to account for some potential unknown costs. The above costs do not take into account utility relocations, land rights or inflation. Utility conflicts and land rights issues would be determined during final design.

CITY PARK PHOTOS



Photo 5.1 Existing inlet at the southeast corner of Park Road at the city park looking west.



Photo 5.2 Existing inlet at the southeast corner of Park Road at the city park.



Photo 5.3 View looking north from existing inlet at southeast part of the city park.



Photo 5.4 View looking south from existing inlet at southeast part of the city park.



Photo 5.5 View looking south at the city park entrance on W. 8th Street and Maple Street. Two existing inlets on Maple Street completely filled with debris.



Photo 5.6 View of inlet on east side just north of W. 8th and Maple Street. Debris has collected in the inlet. Inlet connects to storm sewer system on west side of City Park.



Photo 5.7 View of inlet on west side just north of W. 8th and Maple Street. Debris has collected in the inlet. Inlet connects to storm sewer system on west side of City Park.



Photo 5.8 View looking east at south end of city park near the RV dumping station. Drainage swale collects runoff from the east and enters inlet as shown.



Photo 5.9 View looking west at inlet by the RV dumping station on the southwest side of the city park. Inlet collects runoff and ties into the storm sewer system on the west side of Fredrick Street.



Photo 5.10 View looking south on Fredrick Street toward the levee south of town. Existing storm sewer system on the west side of Fredrick Street which discharges into the Little Blue River.



Photo 5.11 View looking north on Fredrick Street just north of W. 4th Street. Existing curb inlet on the west side collects runoff into the system which discharges into the Little Blue River.



Photo 5.12 View looking north on Fredrick Street just north of W. 4th Street. Existing curb inlet on the east side collects runoff into the system which discharges into the Little Blue River.



Photo 5.13 View looking south on Fredrick Street on the west side. Drainage ditch and existing inlet shown toward the drive. Inlet covered in grass.



Photo 5.14 View looking north on Fredrick Street on the west side at entrance drive of maintenance building. Inlet appeared to be free of debris. Connects to storm sewer which discharges into the Little Blue.



Photo 5.15 View looking north from the levee toward maintenance building on west side of Fredrick Street. Inlet with weir type structure collects runoff from the west and north.



Photo 5.16 View looking south from top of levee where city park storm sewer on west side of Fredrick Street discharges into the Little Blue. Existing 36 inch culvert with flap gate.



Photo 5.17 View looking west at inlet with weir structure on north side of levee west of Fredrick Street.



Photo 5.18 View looking south at inlet with weir structure on north side of levee west of Fredrick Street.



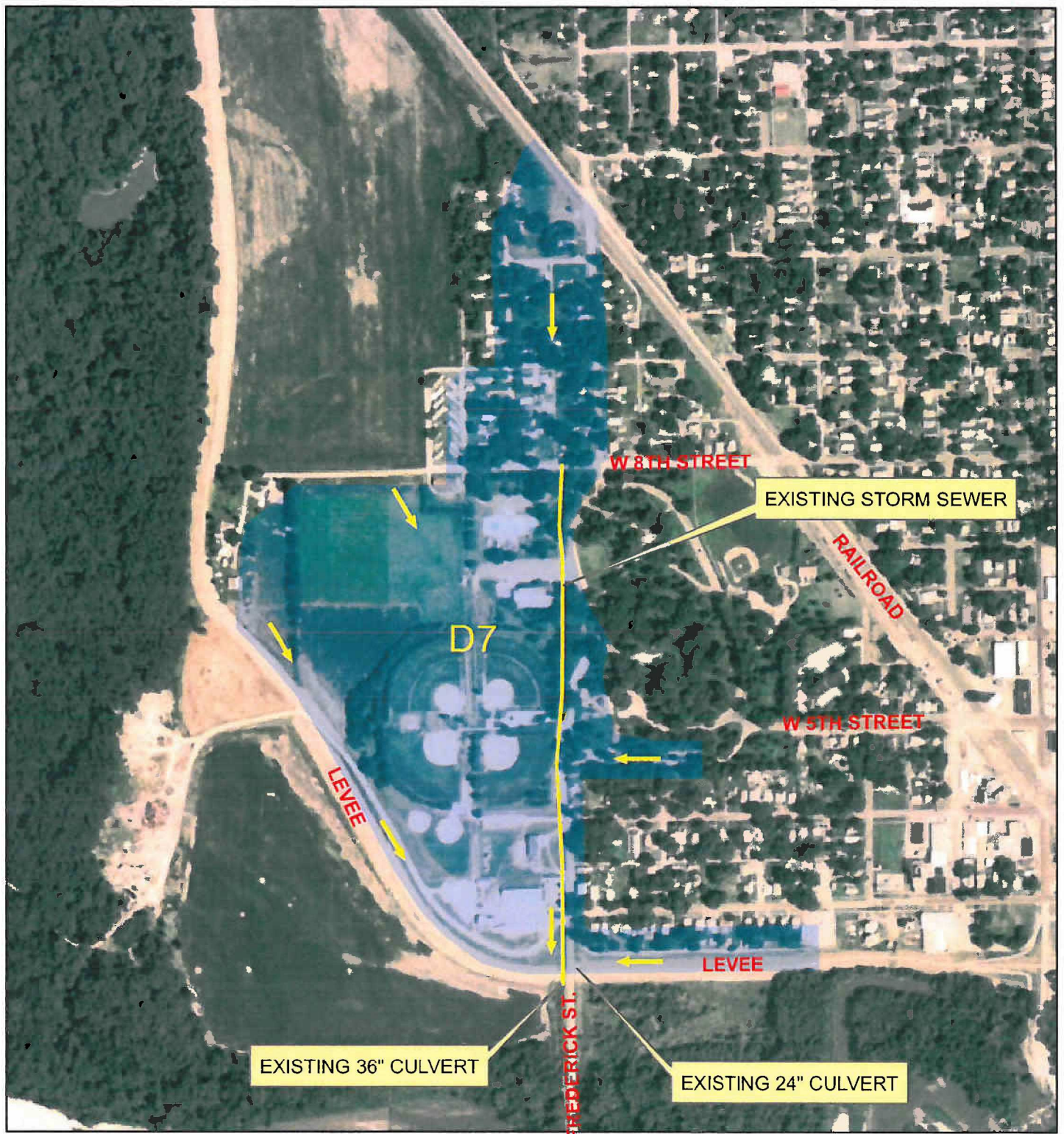
Photo 5.19 View looking north from top of levee on east side of Fredrick Street. Existing 24 inch culvert at toe of levee covered by vegetation. Connects to inlet on west side of Fredrick Street.



Photo 5.20 View looking east from top of levee on Fredrick Street.

SECTION 6

Subwatershed D7



Scale: 1"=600'

Legend

- Storm Sewer
- Drainage Area

PROJECT: 010-0890

DRAWN BY: EJB

DATE: SEPTEMBER 2010

FAIRBURY DRAINAGE STUDY AREA D7

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FIGURE

6

D7: CITY PARK WEST

This area is located in the southwest section of Fairbury, west of 'A' Street between W. 8th Street and W. 5th Street. The park consists of four ball fields, playgrounds, recreational facility, swimming pool, and open space. There is currently an existing storm sewer system with several inlets and manholes which lies between the levee and W. 8th Street, parallel with Frederick Street. This area lies within a Zone X, according to FIRM Panel # 3101200005C which is determined to be outside the 100- and 500-year floodplains.

HYDROLOGIC ANALYSIS

This section provides a summary of the hydrologic conditions and drainage patterns that were used for this site. Rainfall information for the 100-, 50-, 10-, and 2-year frequency storm events were used. Rainfall amounts were 6.80 inches, 6.10 inches, 4.70 inches, and 3.00 inches respectively for the storm events. Preliminary discharges were computed using the USDA Soil Conservation Service (previously SCS, now known as NRCS) Technical Release 55 (TR-55) equations. Soils in subwatershed D7 consist of mainly Type B. Type B soils have a fairly high infiltration rate. See Figure 7.1 for location of subwatershed. Summary of the information obtained using the TR-55 methodology and equations, is found in Table 7.1 below.

Table 7.1: City Park West

Summary of Hydrologic Elements determined using TR-55							
Subwatershed	Drainage Area (Acres)	Curve Number	Time of Concentration (T_c) (min)	Q_2 (cfs)	Q_{10} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)
D7	78	81	26	90	180	270	320

HYDRAULIC ANALYSIS

Subwatershed D7 contributes 90 cfs of runoff in a 2-year storm event. Although not all of that storm water runoff will make it into the storm sewer system in Fredrick Street, a fair amount will. Based on conversations with the City of Fairbury this area does not experience frequent flooding. Using the best available data, the storm sewer was modeled and has a capacity of approximately 9 cfs on the upstream end, and approximately 42 cfs on the downstream end. Based on this information, it is apparent that the existing storm sewer under Fredrick Street does not have capacity to add drainage from area D6.

RECOMMENDATIONS

Maintenance should be performed on all existing area and curb inlets throughout the park, and to the north in the residential areas as well. Many of these inlets have accumulated debris, which is limiting the amount of runoff it can handle.