Murray Pounds, Director Kirkwood Parks and Recreation

- 30+ years w/ Kirkwood Parks & Recreation
- 10 Years as Director
- Current Chair of Advisory Committee, Municipal Park Grant Commission of St. Louis County
- B.S. in Parks & Recreation Administration

City of Kirkwood Park System
- 325 Acres Spread Over 14 Separate Park Sites
- 23 Full Time Staff + 16 FTE Part Time Staff
- Annual Budget Over $5 million.
Andy Franke, Planning Design Studio
- Senior Landscape Architect & Certified Arborist
- 24 Years of Experience
- Clayton & O’Fallon Mo Park Master Plans
- Blackburn Park Monfort Park
- Wentzville Aquatic Center

Planning Design Studio
- Employee Owned St. Louis Firm
- Landscape Architecture and Planning
- Staff of 9 w/ 6 Reg. Landscape Architects
- Parks and Infrastructure Experience
AGENDA

- Kirkwood Park Overview
- Kirkwood Park Stormwater Management Plan
- Implementation
- Lessons Learned
OVERVIEW
2005 Community Wide Master Plan established a long range development plan for the park.

High priority implementation areas identified during the planning process:
- Ridge Area
- New Maintenance Building
- Walker Lake Improvements
“Multi phase components of the “Ridge” included:

- 1: New Concession Stand & Plaza, Scout Pavilion and Comfort Station, and Parking Lot
- 2: New Playgrounds, and Amphitheater Improvements
- 3: Lions Pavilion Renovation
- 4: New Tennis Building and Handball Court Relocation
HOW DID WE GET HERE?

- New Maintenance Building included:
  - Demolition of Existing Maintenance Structure
  - New Maintenance Building
  - New Maintenance Yard and Associated Site Improvements
Walker Lake Improvements included:

- Ph. 1 Bridge Area Improvements
- Ph. 2 Lake Edge Renovation
- Ph. 3 New Lake Pathway
- Ph. 4 Concrete Channel Renovation
## THE TIMELINE

<table>
<thead>
<tr>
<th>Project</th>
<th>Status</th>
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<tbody>
<tr>
<td>Ridge Phase 1</td>
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<tr>
<td>Ridge Phase 2</td>
<td>Completed</td>
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<tr>
<td>Ridge Phase 3</td>
<td>Completed</td>
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<tr>
<td>Maintenance Building</td>
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<tr>
<td>Walker Lake Ph. 1 &amp; 2</td>
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<tr>
<td>Walker Lake Ph. 3</td>
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<tr>
<td>Ridge Phase 4</td>
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<tr>
<td>Walker Lake Ph. 4</td>
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</tbody>
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### Stormwater BMP Master Plan
STORMWATER MANAGEMENT PLAN
Objectives
Site Overview and Data
Summary of Planned Improvements and Phasing.
Agency (MSD) Review Criteria.
Proposed Stormwater BMP's Review
Other Recommendations.
THE PLAN

- Goals
  - Accommodate multiple phases of both current and future development.
  - Estimate implementation costs for long budgeting.
  - Obtain Conceptual Approval from MSD.
  - Identify design solutions most appropriate to park use and operations.
  - Serve as a model to be incorporated into future master planning efforts.
Disturbed Area = 8.33 Acres
Both Existing & Proposed Impervious Area = 22% (20 acres)
Existing Site Classified as Redevelopment
Public Waters (i.e. Walker Lake) could not be used as a water quality BMP
Water Quality Treatment needed to be provided as Dispersed LID BMPs.
Maintenance Building had 0.85 acres of outstanding disturbed area which was added to any future projects.
Hydrodynamic Separator used to meet WQ treatment at Maintenance Building.
Plans needed to include BMP Reserve Areas.
No flood volume detention was required. (Differential less than 2 cfs.)
Walker Lake was used to provide channel protection volume.
Treatment in upsized (150%) bioretention cells was considered a swap for the more polluted surface in the drainage area.
Maintenance and Operation Plan submittal required.
DEVELOPMENT COVERED BY THE PLAN

- Maintenance Building
- Kirkwood Ridge Phase 3
- Kirkwood Ridge Phase 4
- Walker Lake Phase 3
- Walker Lake Phase 4
- Walker Lake Phase 5
- Reim Theater Permeable Parking Lot
- New Parking Lot Underdrains
- Maintenance Road Widening
THE PLAN

- **Strategy**
  - Utilize a variety of solutions which:
    - Serve to inform the public about stormwater run off, and sustainable design solutions.
    - Are appropriate to activities in the park.
    - Are visually unobtrusive as possible.
THE PLAN

Permeable Parking Lot @ Reim Theater
HDS Unit @ Maintenance Building
2 Bioretention Cells @ Walker Lake Area
Freno Bioretention Cell @ Parking Lot Edge
Permeable Parking Lot @ Reim Theater
1 Bioretention Cell @ Parking Lot

STORMWATER MANAGEMENT PLAN
■ Strategy
  ▪ Incorporate Bioretention areas near Walker Lake – Why?
    ▪ Easier to visually blend into adjacent area.
    ▪ Lowest area of the site.
    ▪ Help reduce the visual impact of the parking lot.
Strategy

- Utilize a structural Bioretention area near main parking lot – Why?
  - Treat run off as it comes off parking lot before it moves into Walker Lake.
  - Maximize all available land near Walker Lake.
  - Improve the visual quality of the space between the parking lot and the pathway edge.
  - Establish a planted buffer between the parking lot and the pathway edge.
Strategy

- Locate Permeable Paver Parking near Reim Theater – Why?
  - Smallest contained parking area on site.
  - Visually compatible with front door of Theater.
  - Helped bring impervious vs. pervious totals into balance.
THE PLAN

- **Strategy**
  - Locate Hydrodynamic Separator near the Maintenance Building—Why?
    - Best opportunity to treat an area draining to a creek tributary.
    - Visually unobtrusive area, which is not frequented by park users.
IMPLEMENTATION PLAN
Walker Lake Phase 1 and 2 (Stand Alone Project):
- Bridge Area Improvements
  - New Stone Channel
  - Relocated Water Fall and Skimmers
- Lake Edge Renovation
  - Blast Rock Removal
  - Natural Stone Replacement
  - Aquatic Shelves
  - Aquatic Plantings
  - New Peninsula
- End of Pipe Net Treatments
  - Geyer Road Outfall
  - Main Parking Lot Outfall
IMPROVEMENTS UNDER CONSTRUCTION

- Consolidated Implementation Plan:
  - Permeable Parking Lot Pavement.
  - Freno Proprietary BMP Solution at Parking Lot.
  - Hydrodynamic Separator at Maintenance Building.
  - Bioretention Areas incorporated into Walker Lake area.
Walker Lake Phase 4:
- Reconstruction of Existing Concrete Swale
  - Removal of Existing Concrete Swale
  - Limestone Boulder Edge Rock
  - Limestone Boulder Drops (Waterfalls)
- Stone Channel Bottom
- Replacement of Island Bridge
- Biostabilization Plantings
LESSONS LEARNED
Incorporate stormwater management measures early in the planning process.

Budget for stormwater management measures.

Understand the many impacts of the proposed stormwater improvements.

Allocated adequate review time throughout the design AND construction process.

Adopt a philosophy of flexibility.

For renovation projects, embrace the word retrofit.

BE PREPARED FOR THE UNEXPECTED
QUESTIONS