Urban Habitat Restoration
Notes from 30 Years of Projects

North Creek, Bellevue
Meadowbrook Pond, Seattle
Madrona Park Creek, Seattle
PART ONE: DESIGN

- Overall Approach
- Design Process
  Research – don't skip, learn
  Permitting – local, state & federal
  Public Process – make time for people
  Site Analysis – be thorough
  Conceptual Design / Alternative Solutions
  Design Development / Construction Docs
  Construction Services
Overall Approach

• Mindset Matters
  - check ego, be open & flexible
  - take time to understand site & stakeholders
• Ecological Principles as Guide
• Learn through Literature/other Projects Review
• Multi-disciplinary Perspective & Balance
• Intuitive Thinking
• Informed Experimentation
• Meet People Needs – humans part of urban habitat
Ecological Principles
Back to Basics

- **Limits**: sustainability, conservation, stress
- **Adaptation**: evolution, natural selection
- **Behavior**: reproduction, survival strategies
- **Diversity**: variety, competition, genetics
- **Emergent Properties**: complexity, teamwork
- **Energy Flow**: heat exchange, food chain
- **Growth & Development**: succession, pop. growth
- **Regulation**: balance, functions & systems
Research & Site Analysis

- Take time for these steps; findings often inspire, support & sell design concepts.
- Besides usual site analysis, find out what's happened over time.

Aerial Photo Review: available from 1930's on from Aerometrics.

Historic Maps: available online from UW/WSU Libraries.

Explore Soils: can reveal landfills, hazardous waste, variable soil conditions & types.
Past inspires Healthier Future for Cromwell Park

In-depth historical research & site analysis reveal topographic & hydrologic clues supporting deep, structural re-design that re-sculpts the land, re-creates wetlands & solves downstream flooding. Test pits found saturated peat soil buried under 5-10 feet of fill in the area that is now constructed wetland.

Cromwell Park site, outlined in red, shows dramatic change over time

From expansive peat bog & hummocky forest, to filled schoolground & small forested park (south end) in growing residential neighborhood, to full build-out showing a bifurcated park (flat playfield & remnant forest) with county courthouse to NW.
Horse Creek Daylighting – Historic & Current Map Comparison

Figure 1
Horse Creek Drainage Basin
(Approx. 700 Acres)
Madrona Park Creek Daylighting
Seattle
Excavation exposes century-old cedar piles & logs along Lake Washington; a pleasant surprise

Horse Creek Daylighting, Bothell
Excavation exposes known contaminated soils (oil, gas) & groundwater springs
Pine Ridge Park, Edmonds: Site & Vegetation Analysis
Pine Ridge Park, Edmonds: Slope Analysis
Licorice Fern Natural Area: Site & Habitat Types Analysis

Habitat Types (7.8 total acres) & Slope/Soil Conditions:
- Deciduous Forest (2.1 acres)
- Steep Slopes, Fill or Sandy Loam, Invasives
- Palustrine Forested Wetland (4.0 acres)
- Gentle Slopes, Strings, Organic/Turbic Soils
- Palustrine Scrub-Shrub Wetland (1.7 acres)

SITE ANALYSIS LEGEND:
- Sun
- Part Shade
- Shade
- Highest Value Habitat/Most Wildlife
- Former Home Site/Host Disturbed
- Former Landslide Area

Legend:
- Existing Conditions
  - Park Boundary
  - 5th contours
  - Thornton Creek
  - Trails
  - Parcel
  - Inlet Drain
  - Outlet Drain
  - Platform
  - Yard Waste/Trash
  - Wildlife Homes/Tracks
  - Cedar Stumps
    - (Partial Survey)

Scale Reduced to 1" = 80'
1 inch = 40 feet

EarthCorps
LOCAL RESTORATION - GLOBAL LEADERSHIP
Design Elements

- Topography – foundation for habitat diversity; essential for water bodies
- Habitat Structures – boulders, woody debris, snags, bird & bat boxes; support pollinators
- Plant Communities – think communities & succession vs individual plants & static
- Aesthetics & People Needs – beauty, visibility, safety, access, environmental awareness
- Preventative Maintenance – covered in Part 2
- Imagination – habitat as part of all projects
Atlantic City Boat Ramp
Seattle, WA
1986

Seattle's 1st "Green" Parking Lot?
Wetland swales created within large islands detain and treat runoff before its release into Lake Washington.

Innovate on Traditional Projects

Newly constructed for $139,000
10-years later
North Creek Relocation, Bellevue, WA 1986-1990

Early example of successful creek restoration is part of street widening project.
North Creek Relocation, Bellevue, WA 1986-1990

Creek, floodplain & bioswale systems reduce flooding, improve water quality & provide pedestrian access, passive recreation & environmental education. Built for $250,000.

1991 WASLA Honor Award for Design