Study Area
western Placer County, California
Rapid growth, needs parks
Example Project
Identify Potential Park Sites That:

- Are in western Placer County,
- within 150m of streams,
- within 300m of wetlands,
- soils that support vernal pools,
- have natural vegetation,
- < 3 km from urban areas,
- must be in block groups with pop. den < 50 p/mi²,
- not in city limits,
- not split by major roads,
- in addition, identify those 0-1, 1-3 km from urban areas.
First Step: what data layers do I need?

- < 300m to wetlands
- < 150m to streams
- Soils with vernal pools
- Within study area
- Outside city limits
- Restricted to natural vegetation
- Within 3 km of urban pop. den < 50 p/km
Data Layers: from the general to the best available (remember Chapter 7?)

Bounding area (given, from county map)
Landcover - MRLC, NLCD,
Population Density - U.S. Census
Soils - SSURGO
City Limits - Municipal data
Wetlands - National Wetlands Inventory (NWI)
Streams - National Hydrologic Dataset (NHD)
Roads - California Dept. of Transportation
How do we turn vague requirement list into a set of operations? Identify natural selections, buffers, overlays, AND, OR operations

- Are within the study area,
- any sites within 150m of streams,
- any sites within 300m of wetlands,
- any soils with vernal pools,
- must have natural vegetation,
- < 3 km from urban areas,
- must be in block groups with pop. den < 50
- not in city limits
- not split by major roads
- in addition, identify those 0-1, 1-3 km from urban areas
Candidate Areas Satisfy Any of These (OR criteria)

- 300m from wetlands (wetlands buffer)
- 150m from streams (stream buffer)
- soils with vernal pools (clip)

Final Area MUST Satisfy These (AND criteria)

- within study area
- outside city limits
- restricted to natural vegetation (from landcover)
- within 3 km of urban (from landcover)
- pop. den < 50 p/km
Additional Information

- Parcels unsplit by major roads
- Parcels 0-1, 1-3 km from urban areas
- Calculate travel time to cities for largest parcel
A solution
(Ahhhrreggg, those cursed flowcharts!)

Union all the “ors”, then

Clip/restrict by the “must” criteria
NHD Flowlines

Why subset?
Subset NHD Flowlines for speed, but don’t clip... Why?
Buffers Extend Inside from Features Outside - If You Clip First, You Lose
Soils - Where are vernal pools? Literature review yields list of soil types, found in restricted SSURGO table.

Join, then Select.
Suitable Soils
Soils, Wetlands, Streams

How to combine?

Union, Dissolve
All potential areas, clipped
Applying the “AND” Restrictions - Reducing the Area

City Limits → select, reclass, dissolve → Outside city limits → erase → All Potential Areas

Must Not be in City Limits
Want to “Clip”, but save the outside. Standard Clip function doesn’t work....but Erase function does. Could also Union, select, delete
Voila!
Applying the “AND” Restrictions – Reducing the Area

Must Not be in Farm or Urban Land Use or Converse, Must be in Natural Vegetation
Select the Non-Farm, Non-Urban, “Natural Vegetation”

From NLCD, MRLC, or NASS (you remember this acronym soup, don’t you?)
Remove Raster “Speckle”

5 x 5 median smooth

convert to vector
Clip Remaining Potential Areas by Study Area
Must be in Areas with Population Density < 50 p/sq.km.
Join a Population Table, Calculate Area, Density, Select Pop. Den. < 50, Export, Clip

Pop. Data Provided for Larger Area - Is When/How We Subset to Study Area Important?
Must Subset/Clip AFTER Calculation of Pop. Density, because the Tracts Cross our Study Area Boundary (or any other analysis boundary) and population data are aggregated for the original polygon. If you Clip first, the Population column will pass through unchanged, but will now be associated with a smaller area for polygons that straddle the study area (e.g., cyan polygon to the left)
Pop. Den < 50

clip
Reclass Landcover, Urban then Smooth
Buffer Urban Areas, Condition Roadlines, Combine with Remaining Areas
1km & 3km Buffers

Intersect with Suitable Polygons

Candidate Polygons, almost done
Union with Roads

Select by Area, Export
Final Potential Sites