Case Study: Viewshed Protection Area Zoning Law for the Town of Day

GIS Support to Local Government
NYS Adirondack Park Agency
Adirondack Park Agency

- Land Use Regulatory State Agency
- 70 Staff
- 10 staff doing part-time GIS (5% to 75%)
- 90% of Agency staff use GIS
- Approximately 100 municipalities in the 5.8 million acre park.
Local Government Support

- Town of Day in Saratoga County
- Area 42,000 acres
- 2000 population = 920
- Est. 2% pop. growth

*Single-family new house construction building permits:*
- 1996: 4 buildings, average cost: $50,000
- 1997: 5 buildings, average cost: $89,000
- 1998: 9 buildings, average cost: $28,300
- 1999: 3 buildings, average cost: $250,000
- 2000: 9 buildings, average cost: $74,400
- 2001: 7 buildings, average cost: $71,700
- 2002: 6 buildings, average cost: $53,500
- 2003: 10 buildings, average cost: $71,000
- 2004: 13 buildings, average cost: $121,800
## Land Use & Development Plan

<table>
<thead>
<tr>
<th>Land Classification</th>
<th>Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate Intensity</td>
<td>2,531</td>
</tr>
<tr>
<td>Low Intensity</td>
<td>2,035</td>
</tr>
<tr>
<td>Rural Use</td>
<td>12,801</td>
</tr>
<tr>
<td>Resource Management</td>
<td>14,826</td>
</tr>
<tr>
<td>Wild Forest</td>
<td>6,753</td>
</tr>
<tr>
<td>Intensive Use</td>
<td>5</td>
</tr>
<tr>
<td>Open Water</td>
<td>3,420</td>
</tr>
<tr>
<td><strong>Total Town</strong></td>
<td><strong>42,369</strong></td>
</tr>
</tbody>
</table>
Residential/Vacant Mix
Section 4.8 Town of Day Viewshed Protection Area

4.8.1 Area Established. A Town of Day Viewshed Protection Area is established. The Town of Day Viewshed Protection Area is the area designated on the Town of Day Viewshed Protection Area Map, a copy of which is hereby incorporated into this Zoning Law. The Town of Day Viewshed Protection Area is an overlay district, for areas included in the Town of Day Viewshed Protection Area, the provisions of this Section 4.8 apply as well as the provisions applicable to the district in question (Sections 4.1 through 4.7) and the other provisions of this Zoning Law.

4.8.2 Intent. The Town Board of the Town of Day finds that many landscape features, geological features and other resources of the Town of Day and the Adirondack Park have special aesthetic, scenic or historical value. Many of these resources are located in this Town of Day Viewshed Protection Area. Great Sacandaga Lake is a significant resource of the Town, and many of the resources located in the Town of Day Viewshed Protection Area are visible from Great Sacandaga Lake, or from public roads. In order to protect and preserve those resources and to prevent or diminish the loss of those irreplaceable resources, the Town Board hereby declares it to be the public policy of the Town of Day to protect, perpetuate and enhance those resources.
Final Map

Town of Day Viewshed Protection Area

Visible
Not Visible
2004 Parcels
County Boundary
Town Boundary
Stream
Intermittent Stream
Major Roads

May 2005
Prepared by The Adirondack Park Agency
Initial Results

- Create 1/4 mile interval observer points using Dynamic Segmentation Routes
- Run Visibility Analysis from 92 points
Some areas are highly visible from the 92 observer points along North and South Shore roads.
Majority Filter

Visible

Not Visible

Sacandaga River

North Shore Road

South Shore Road
Final Processing

- Smooth Boundary
- Dissolve Small Groups of Cells
- Convert Raster Layer to Polygon
- Remove Selected Road Corridors
Final Map (inset)
Take Notes!

Run Visibility Analysis:
Run ArcToolbox>Spatial Analyst Tools>Surface>Viewshed
syntax: Viewshed daydem QrtrMileShorePts2 D:\GIS\GIISSpecialProjects\localgov\day\ShoreView2 1 FLAT_EARTH #

Reclassify Visibility Results:
Run ArcToolbox>Spatial Analyst Tools>Reclass>Reclassify
syntax: Reclassify "Visibility from N & S Shore Rds" Value "0 0 0 51 1" D:\GIS\GIISSpecialProjects\localgov\day\Reclass_Vis DATA

Run Majority Filter:
Replaces cells of a raster based upon the majority value of contiguous neighboring cells.
Run ArcToolbox>Spatial Analyst Tools>Generalization>Majority Filter
MajorityFilter reclass_vis D:\GIS\GIISSpecialProjects\localgov\day\Maj_Vis FOUR MAJORITY

Run Boundary Clean:
Smoothes the boundary between zones by expanding and shrinking the boundary.
Run ArcToolbox>Spatial Analyst Tools>Generalization>Boundary Clean
1) Right click in menu àµ±æ–°çµ¬ Customize Toolbars.
2) Click Context Menus check box
3) Select Customize>Commands tab and click Linear Referencing
4) Open Context Menus>Feature Layer Context Menu
5) Drag the "Convert Hawthes to Graphics..." command to the
Convert Hatches to Graphics
Spatial Analyst Tools Used

- ExtractByMask – creates a town DEM
- Viewshed – the visibility analysis using shore points
- Reclassify – “on/off” data
- Majority Filter – remove “salt and pepper”
- Boundary Clean
- Region Group, Extract by Attributes, Nibble
Vector Process

- Raster to Polygon
- Buffer – remove 1/10 mile setback from selected roads.
- Erase – remove northern, mostly Forest Preserve area of town.
**Metadata**

**maj_vis**

**Data format**: Raster Dataset - ESRI GRID

**File or table name**: maj_vis

**Coordinate system**: Universal Transverse Mercator

**Abstract**: Majority Filter of Visibility Reclass for Town of Day. This layer was used in final visibility results. Used Majority Filter command default settings.

**FGDC and ESRI Metadata:**

- [Identification Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
Geoprocessing History:

**Process:**
- **Process name:** MajorityFilter_2
- **Date:** 20050422
- **Time:** 161638
- **Tool location:** C:\arcgis\ArcToolbox\Toolboxes\Spatial Analyst Tools.tbx\MajorityFilter
- **Command issued:** MajorityFilter reclass_vis D:\GIS\GISSpecialProjects\localgov\day\Maj_Vis FOUR MAJORITY

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Thank You

www.apa.state.ny.us/gis/

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