Montgomery County
Water Quality Advisory Committee
Forest Conservation Advisory Committee
November 15, 2011

Turf to Trees

Rural Residential Reforestation in Baltimore County

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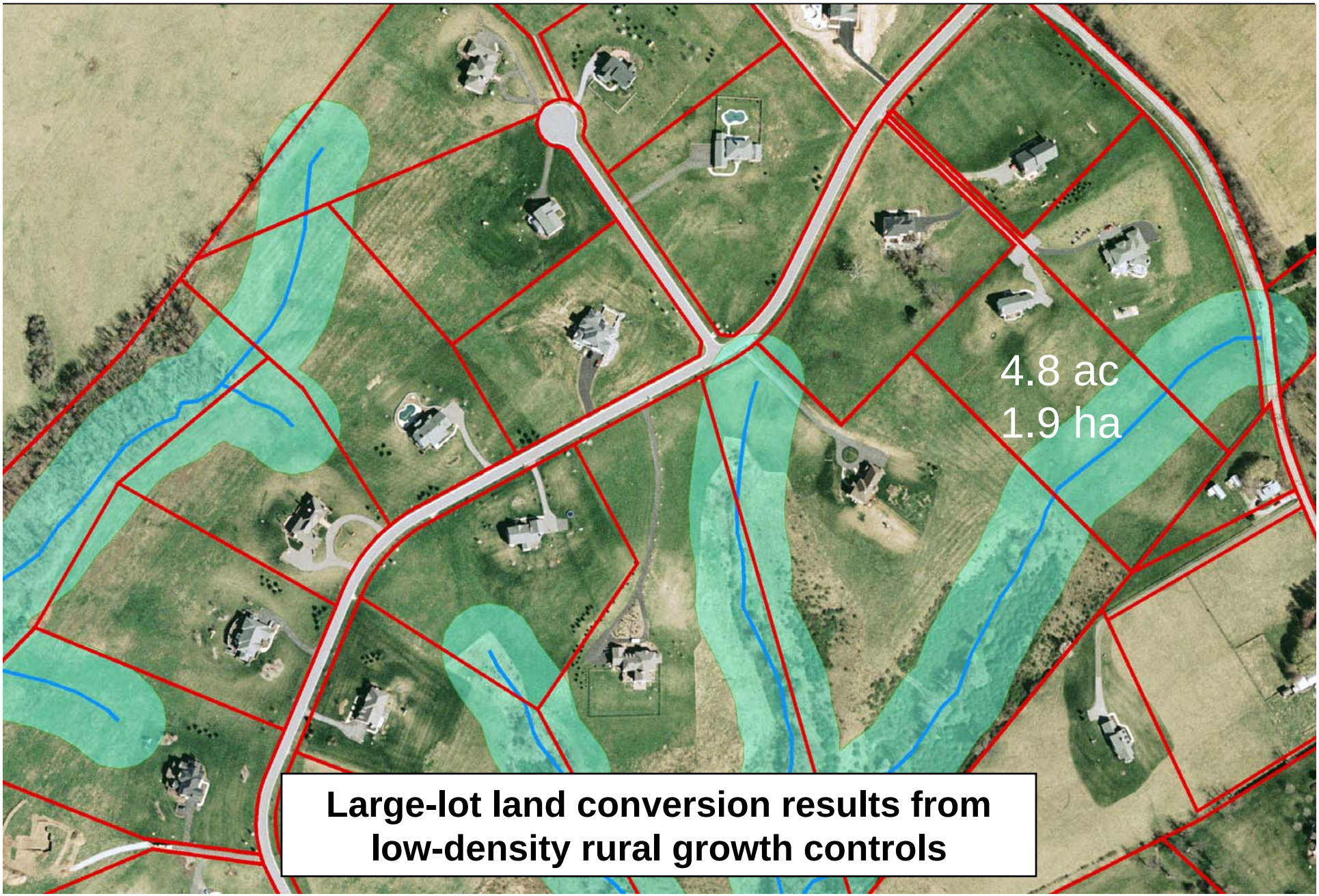
“I didn’t want all of this land, it just came with the house.”




“mindless mowing of excess lawn”

Land Cover for Rural Residential Parcels

"Excess lawn" is existing grass area on a parcel in excess of 1 acre of grass

On this 4.8 acre lot, all grass other than the house/driveway and 1 acre of lawn is "excess lawn"

- GIS analysis of 28,181 parcels classified in land use database as rural residential:

Land Cover	Acres	%
Total lot area	60,596	
Grass/lawn .	20,278	33.5%
Tree canopy	36,778	60.7%
Bldgs & roads	1,915	3.2%
Water & other	1,625	2.7%
Excess grass/lawn	7,136	
Potential canopy	43,914	

- Of the total rural residential parcels, 1,913 have 1-10 acres of excess lawn:

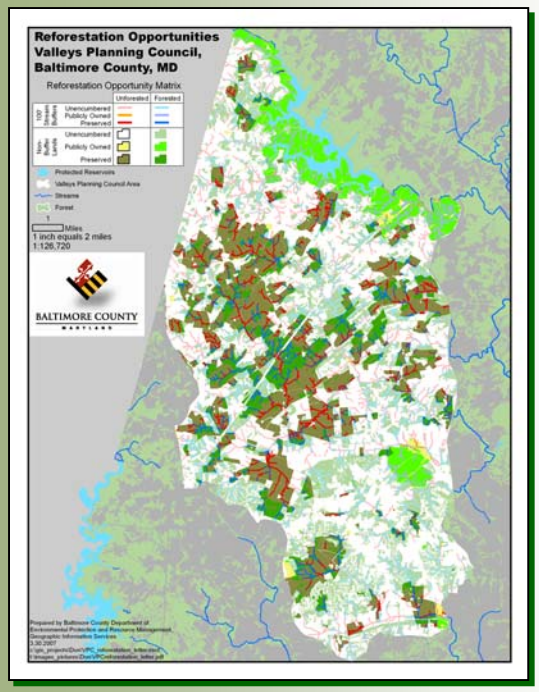
Land Cover	Acres
Total lot area	11,917
Existing canopy	4,970
Excess grass	4,527

- There appears to be significant potential to convert excess lawn to forest cover.

Project Goals

- To protect and improve habitat and water quality by increasing forest cover along stream buffers and contiguous forest patches, primarily in reservoir watersheds.
- To educate rural residential lot owners (and improve stewardship capacity) about their role as managers of larger forest and stream systems shared with other lot owners.
- To reduce barriers and provide incentives to landowners for conversion of mowed, “excess lawn” areas to new forests.

Project Overview



- Rural Residential Stewardship Initiative
  - $27,200 NFWF grant (+$15,699 in-kind match)
  - Fall 2005 - Spring 2006
  - 25 acre goal; planted 22.24 acres (-4.8 acres)
  - 12 landowners in 2 subdivisions (Kimberly and Bernoudy Farms)
- Valleys Reforestation Initiative
  - $50,000 NFWF grant (+$20,595 in-kind match)
  - Spring 2008 – Fall 2009
  - 21.7 acre goal; planted 26.3 acres
  - 8 rural property owners, 2.12 linear miles of streams

Landowner Barriers

- Perceived role as a land/resource manager

  "I didn't want all of this land, it just came with the house."

- Knowledge of forest ecosystems – tree species, reforestation, maintenance
- Planting equipment
- Legal aspects – restrictive deed covenants
- Costs (attorneys, easement recordation)
- Community conformance and expectations (nature v. McMansions)

County Role

- recruit participation of landowners – subdivision meetings
- design reforestation projects with landowners (“walk and talk”)
- provide equipment (truck, tractor,trailer, hardwood seedling planter)
- provide supplies (trees, seedlings, shelters, rodenticide, fertilizer)
- prepare sites and install reforestation
- train landowners to monitor and maintain reforestation areas

Environmental Outcomes

Borden property – planted 2009

Shaper property – planted 2009

Rural Residential Stewardship Initiative

- planted 3,109 trees on 22.24 acres (17.44 net)
- 222 lbs. N, 19 lbs P, 7 tons sediment (net acres)

Valleys Reforestation Initiative

- planted 4,880 trees on 26.3 acres
- 293 lbs N, 25 lbs P, 10 tons sediment reduced
- used 2002 MD loads (#/ac/yr) from Bay Model

	TN	TP	Sediment (tons)
agriculture	14.105	1.083	0.449
forest	1.378	0.018	0.035

- farm loads are 12, 60, and 13 times greater
- annual benefits, assumed at maturity

other ecosystem/energy benefits (reduced mowing)

New Bay WIP Criteria for Reforestation

- Pollution reduction credits vary by watershed and % of load delivered (e.g., Baltimore County gets “0” credit for any BMP’s in Liberty Reservoir watershed; model assumes 1/3 of Loch Raven Reservoir loads are delivered)
- Bay WIP approach is the difference between nutrient loads delivered per acre of “pervious urban” area and “forest.”
- Countywide delivered load averages for Baltimore County:

Pervious urban	4.93 lbs/ac **N**	0.17 lbs/ac **P**
Forest	0.94	0.02
Reforestation	**3.99**	**0.15**

- Reforestation credit is significantly less than our “outcomes” for our rural residential reforestation grant projects**.**

Cost Comparisons/Unit Costs

	RRSI	VRI
Acres Planted	22.24	26.30
Trees Planted	3,109.00	4,880.00
Trees/Acre	139.79	185.55
Total Cost	$ 42,899.00	$ 70,595.00
Total Cost/Acre	$ 1,928.91	$ 2,684.22
Total Cost/Tree	$ 13.80	$ 14.47
Grant Cost (-Match)	$ 27,200.00	$ 50,000.00
Match	$ 15,699.00	$ 20,595.00
G Cost/Acre	$ 1,223.02	$ 1,901.14
G Cost/Tree	$ 8.75	$ 10.25

All costs above exclusive of land-owner monitoring and maintenance

Typical cost of a stormwater facility retrofit: $150,000

Project Cost Variables:

- tree size class and cost
- labor rates
- supplies (shelters etc)
- planting density
- travel (distance to nursery)
- site size, topography, fragmentation; manual v. mechanical planting

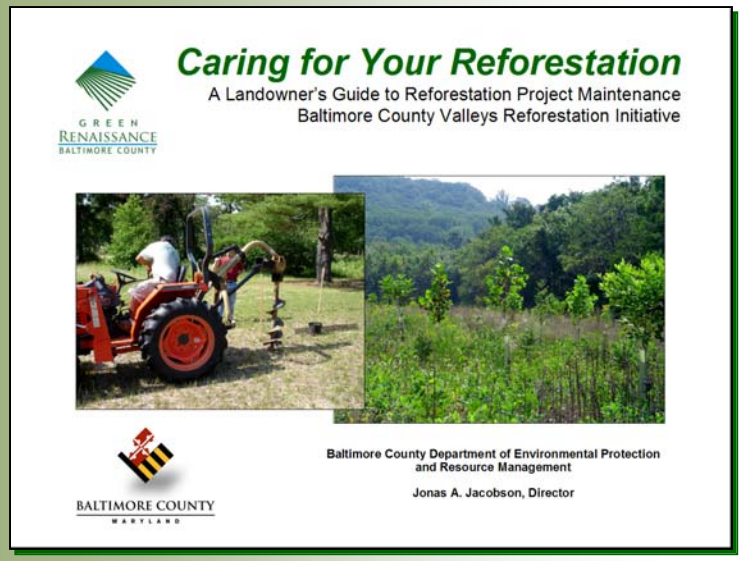
Match Components:

- grant management
- partner organizations
- reforestation design
- planting equipment
- GIS/GPS support
- landowner coordination

Mowing Options

- preferred – once per year, end-of-season mowing to eliminate colonization of invasive species/vines, with a reduction in mowing over time as shade increases
- continuation of existing mowing as meets the aesthetic needs of lot owners, recognizing that mowing should be phased out in 5± years
- no mowing, recognizing the need to selectively control invasive weeds/vines

Post-Reforestation



- Each participant received a graphic plan and project description
- Each participant received a maintenance guide: "*Caring for Your Reforestation*"
- Periodic follow-up emails, site visits
- EPS continues to provide limited technical assistance
  - Enrollment in forest management programs (property tax reduction)
  - Assistance with contacts for invasives spraying
- Follow-up maintenance

Maintenance Focus

- Retract bird netting
- Straighten/clean out tree shelters, avoid mowers
- Control/spray vines and noxious weeds such as Canada Thistle

Deer browse damage

Kimberly in May 2010 (left) and Nov. 2011 (right) – planted 2005-2006

Bernoudy Farms in May 2010 - planted 2005-2006

Observations and Recommendations

- Long-term cost-effectiveness and success are probably better served by installing larger deer-resistant shelters.
- Planting design needs to better balance mid- to long-term forest structure with short-term goals of reforestation.

- Each site and owner are different.
- Sites cropped for many years will be especially nutrient deficient.
- Need to assure HOA is supportive of reforestation on individual lots.
- Landowners can provide continuing maintenance and change mowing practices.
- Contractual mowers need to avoid damage to tree shelters.
- Landowners need assistance with control of regulated noxious weeds if frequent mowing is not adopted.
- After initial planting, projects need to provide for replacement of dead trees.
- Most grant programs are inadequate to do this work successfully.