

Carolina North Ecological Assessment

PEER REVIEW



Carolina North Ecological Assessment



Background

- Ecological Characterization and land development suitability analysis for the Carolina North property
- Goal of the study – Identify land areas that are most conducive for land conservation and land development with regards to regional and local ecological processes, functions and resiliency
- Focus of the study:
 - conservation > restoration >development
 - regional, local and site
 - temporal
 - process and function



Methodology

- Data collection and cursory field characterization
- Literature search
- Inventory Mapping
 - Soils, geology, morphology, water resources, land cover, vegetation, habitat, landscape ecology, cultural, historic and recreational resources
 - GIS mapping (existing data layers)



Methodology

- Analysis
 - Scientific and value driven
 - Consensus driven
 - Identify important ecological attributes based on:
 - + uniqueness and rarity
 - + role in governing ecological processes and resiliency (cause and effect relationships)
 - + relationship to regional landscape processes
 - + social and cultural values
 - + aesthetics



Methodology

- Analysis
 - Development of suitability metrics and values for various ecological attributes
 - Application of suitability values to the site

METRIC - Wildlife habitat



ECOLOGICAL ATTRIBUTE

Regional Connectivity

VALUE

2 x

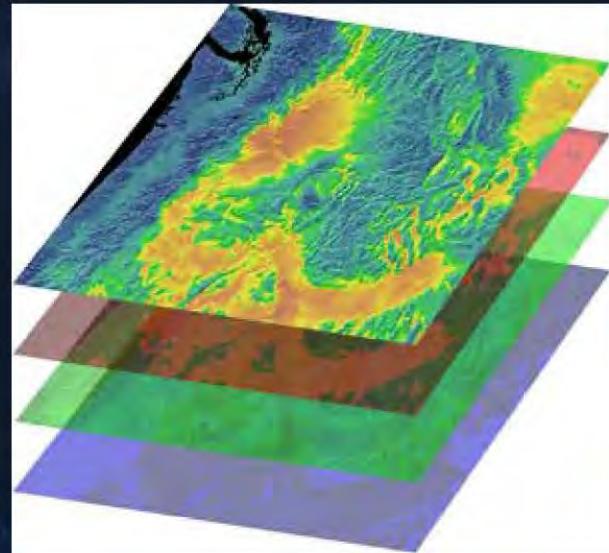
SUITABILITY

SCALE

No ecological impacts
Acceptable with restrictions
Compromise ecological integrity

Methodology

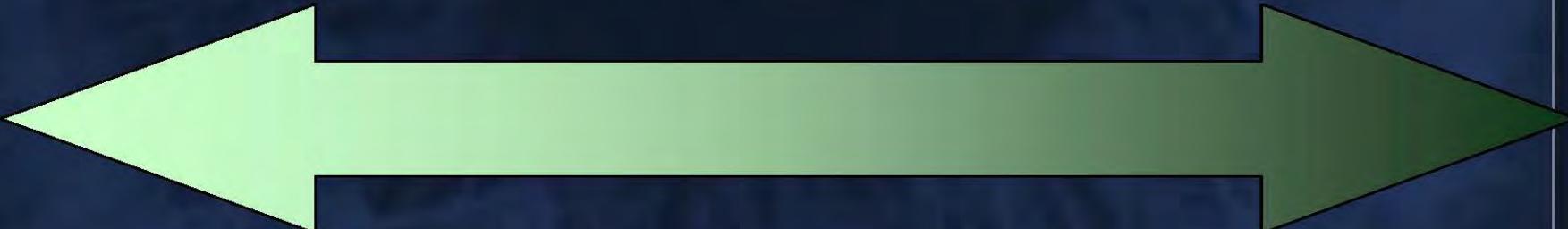
- Analysis
 - Overlay and Identification of ecological suitability



Disturbance will result
in no or marginal
ecological impact

Disturbance acceptable
if BMPs or restrictions
are applied

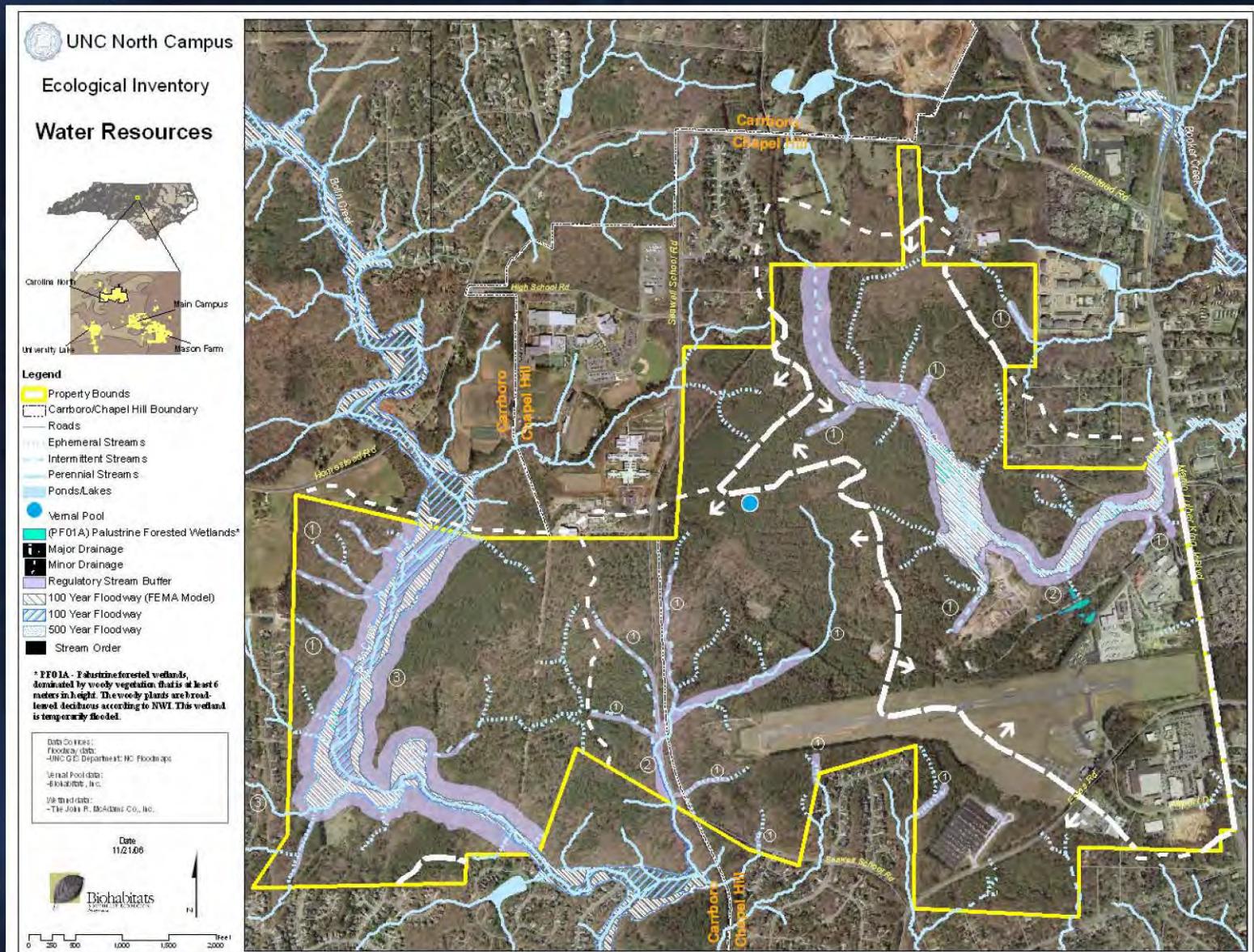
Disturbance will
compromise ecological
integrity



Regulatory
restrictions or
conservation area

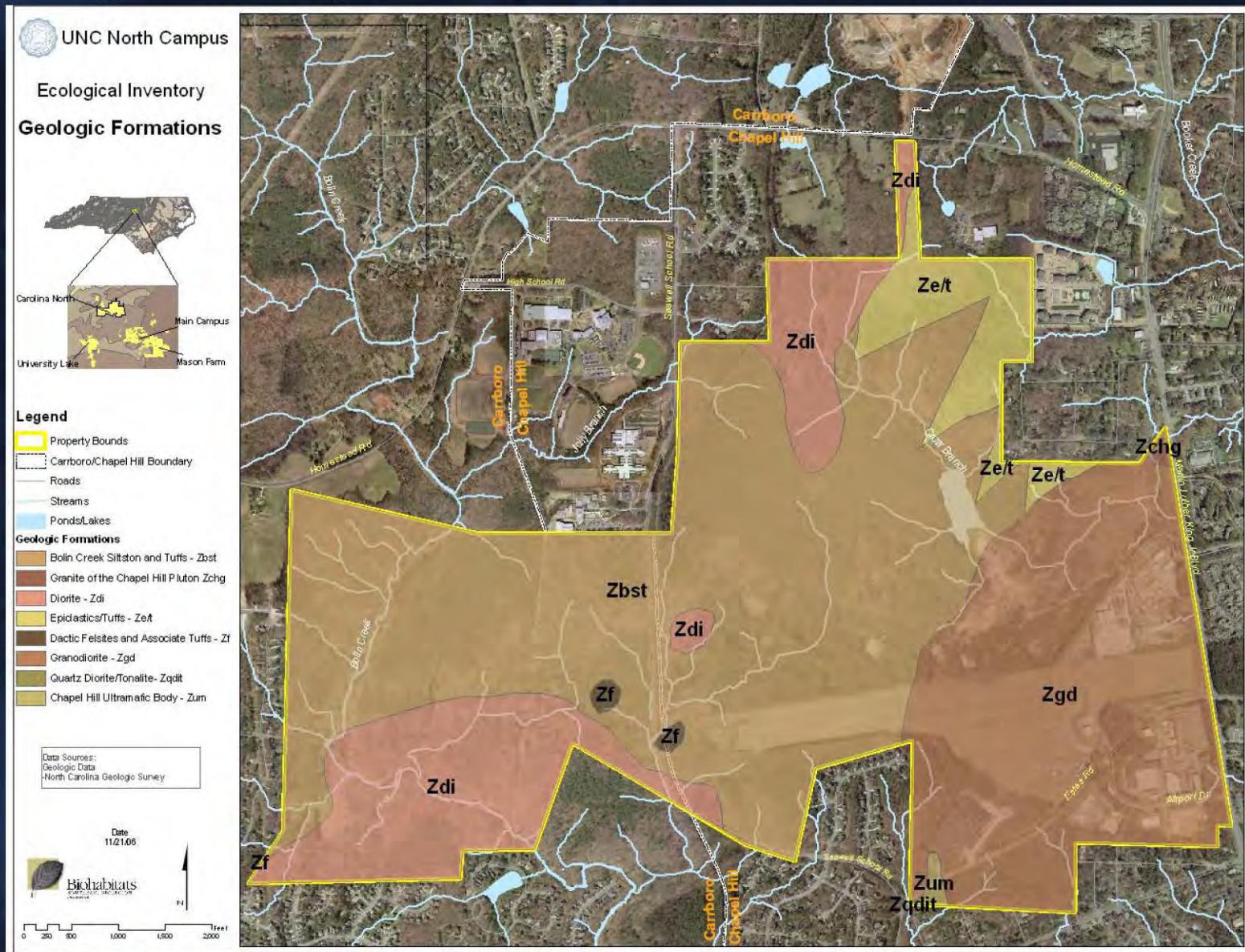
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Inventory – Water Resources



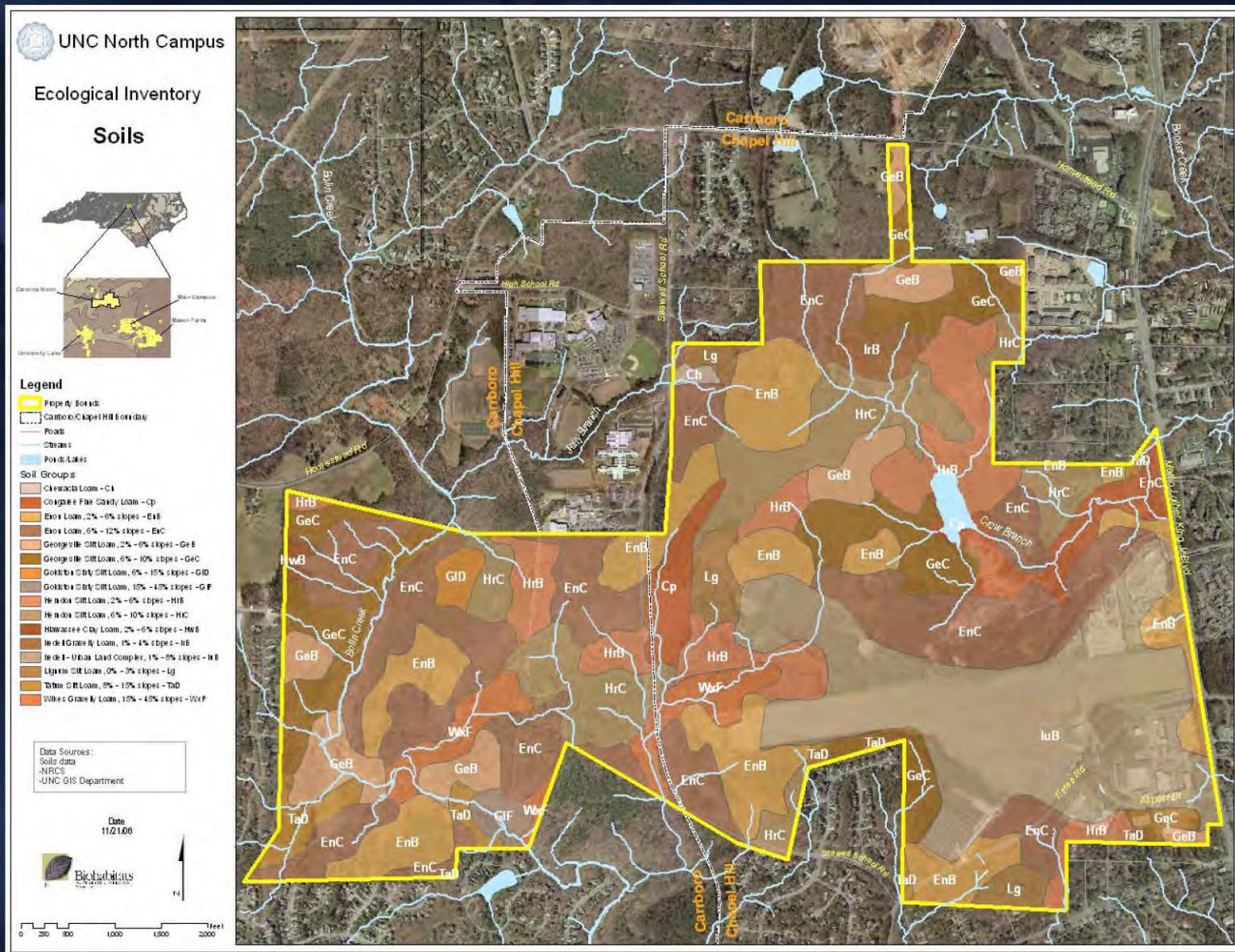
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Inventory – Geologic Formations



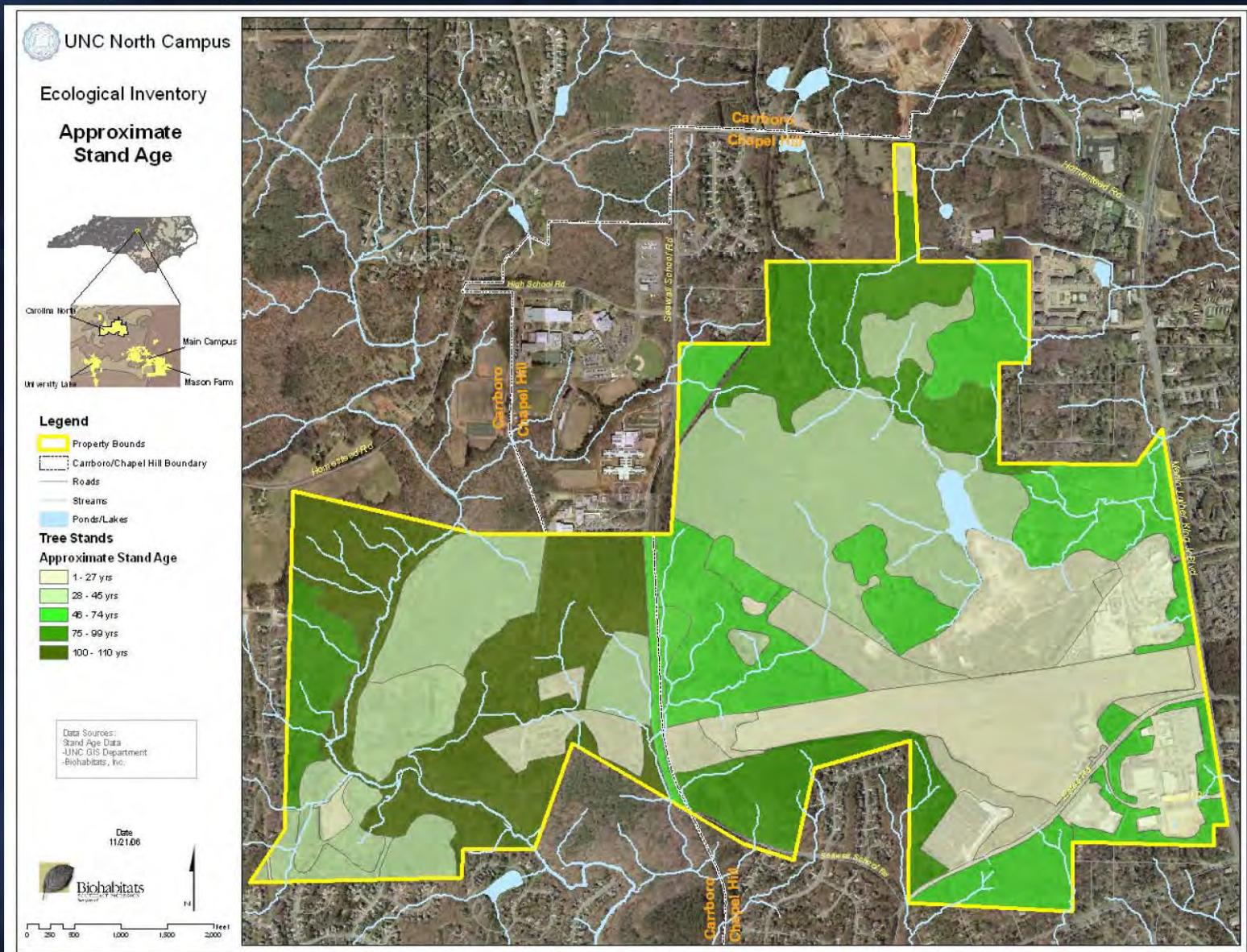
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Inventory – Soils



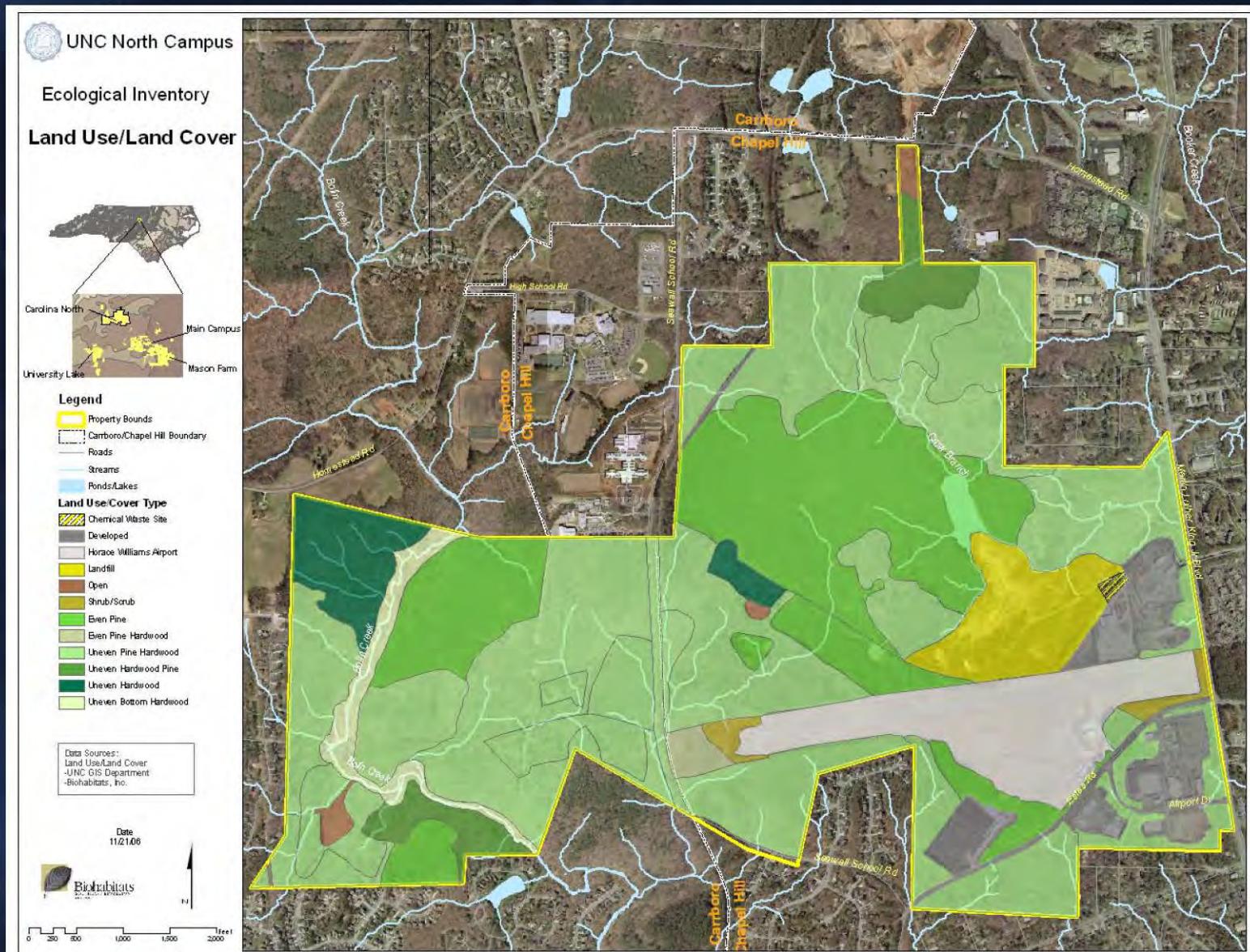
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Inventory – Approximate Stand Age



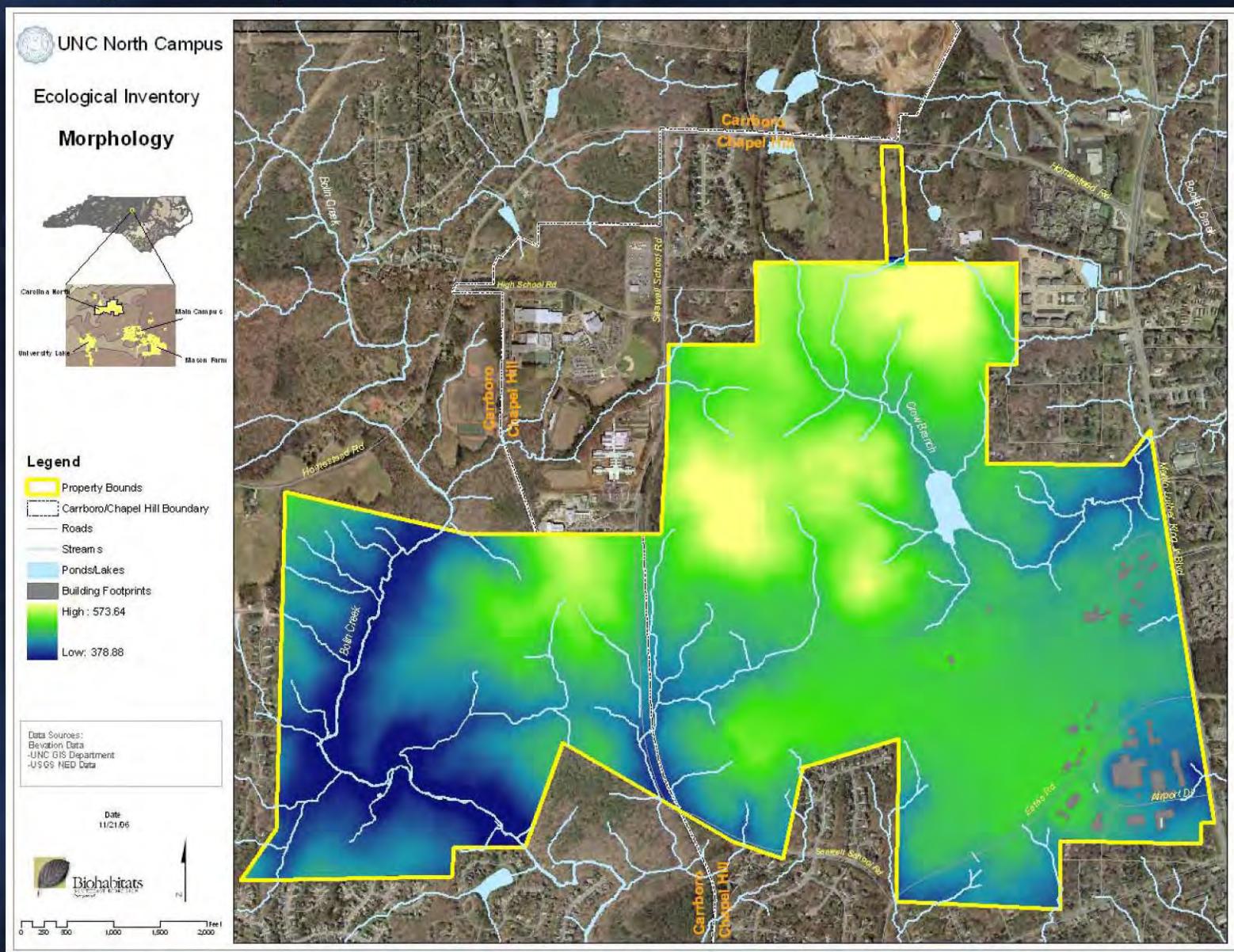
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Inventory – Landuse/Landcover



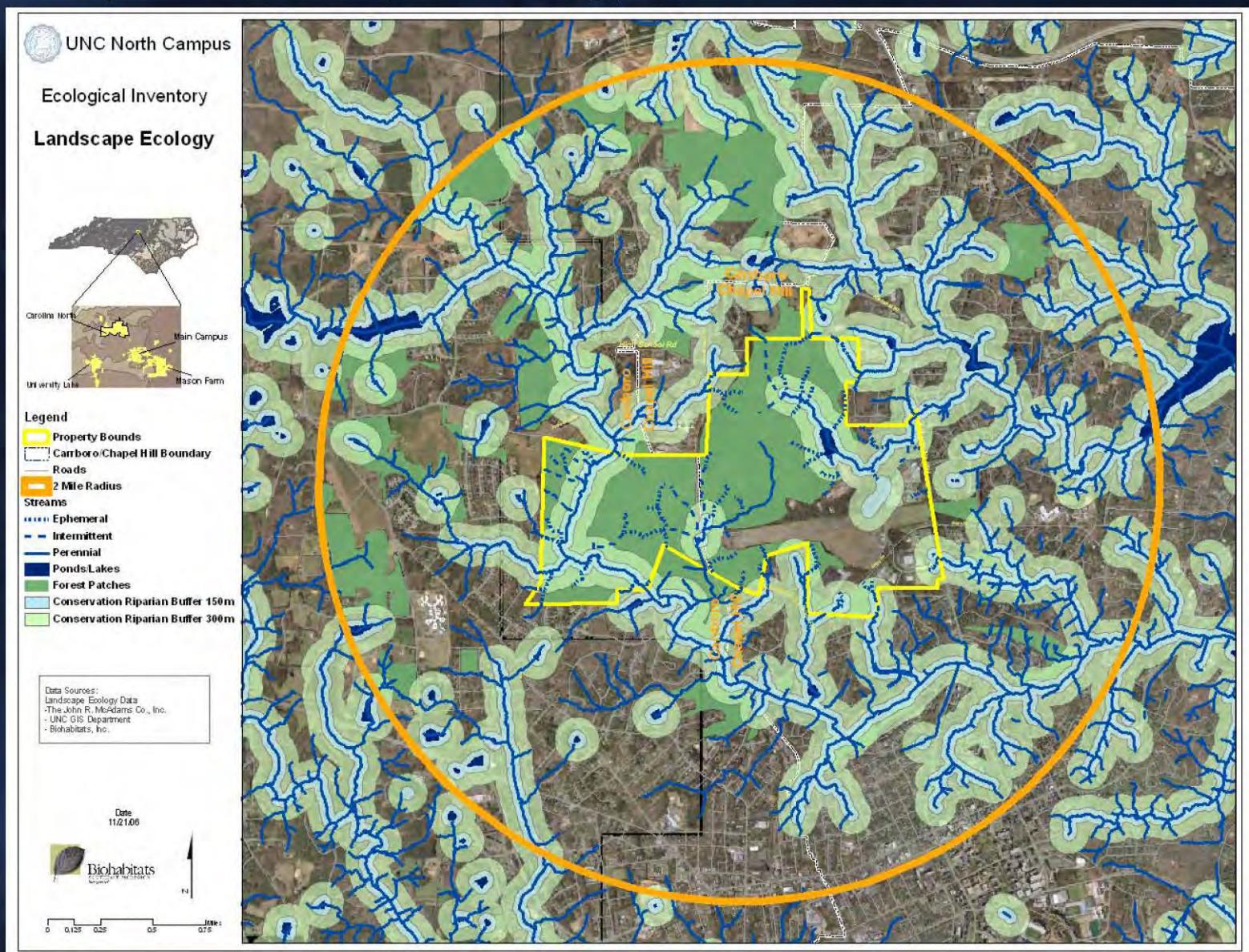
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Inventory – Morphology



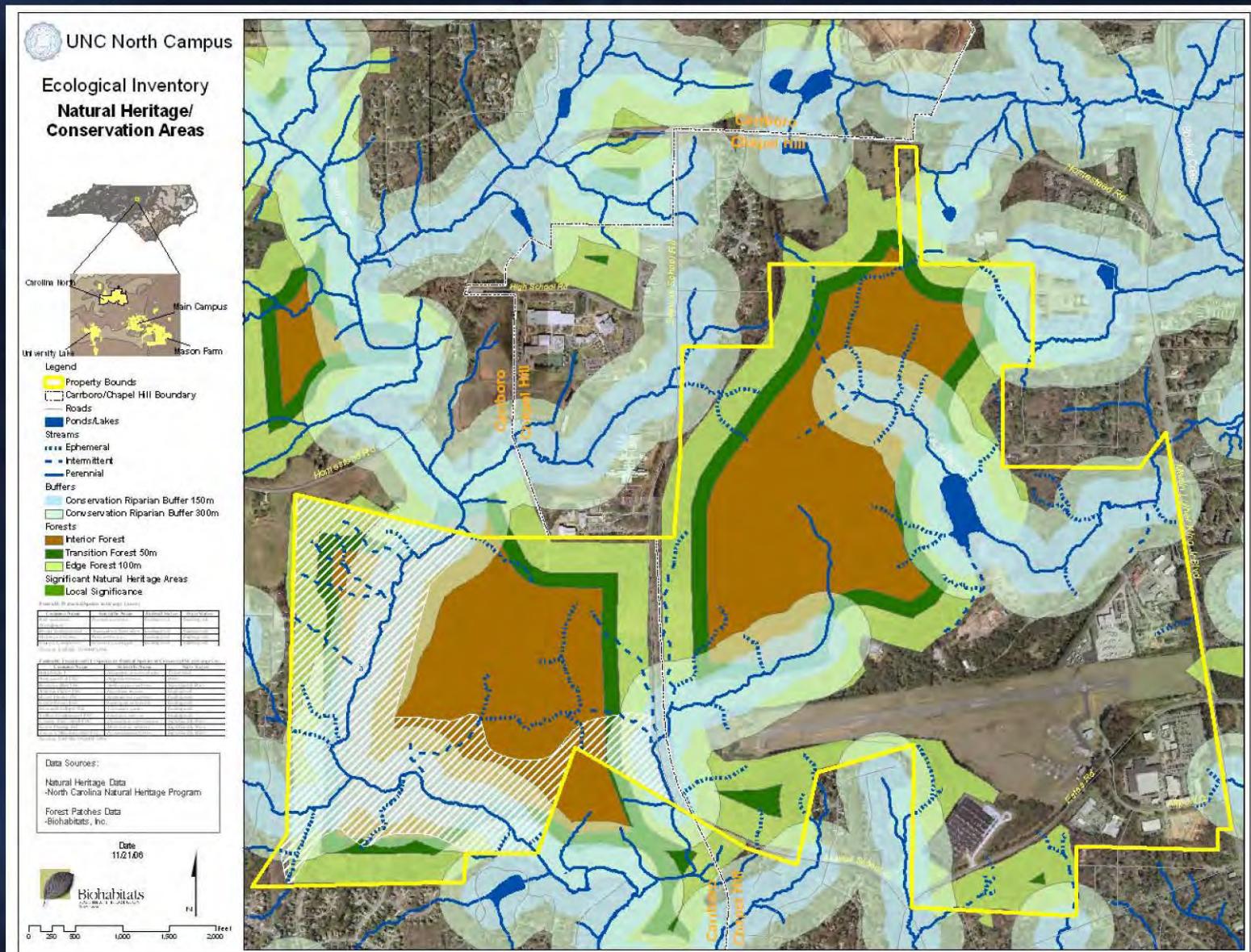
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Inventory – Landscape Ecology



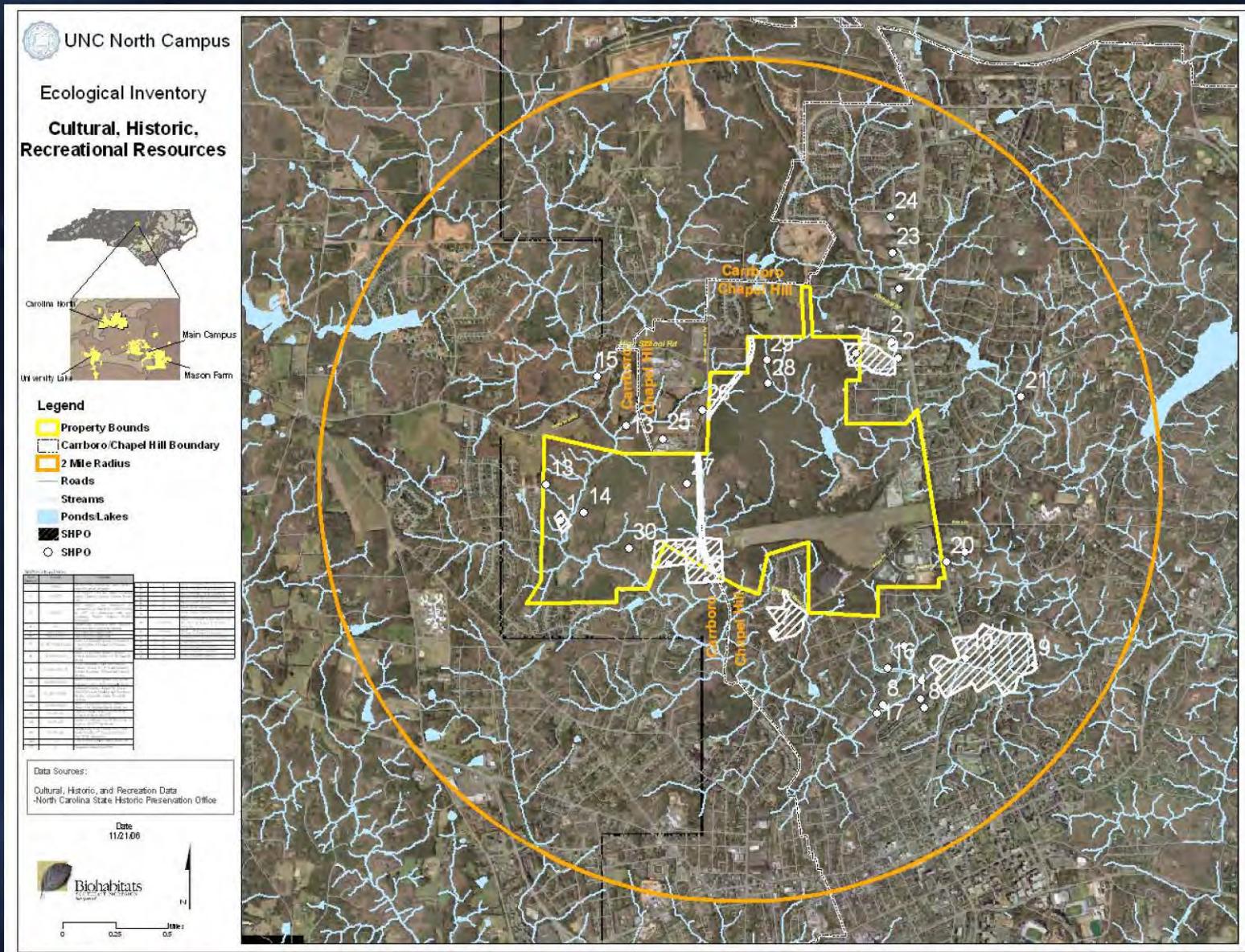
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Inventory – Natural Heritage/Landscape Ecology



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Inventory – Cultural, Historic, Recreational Resources

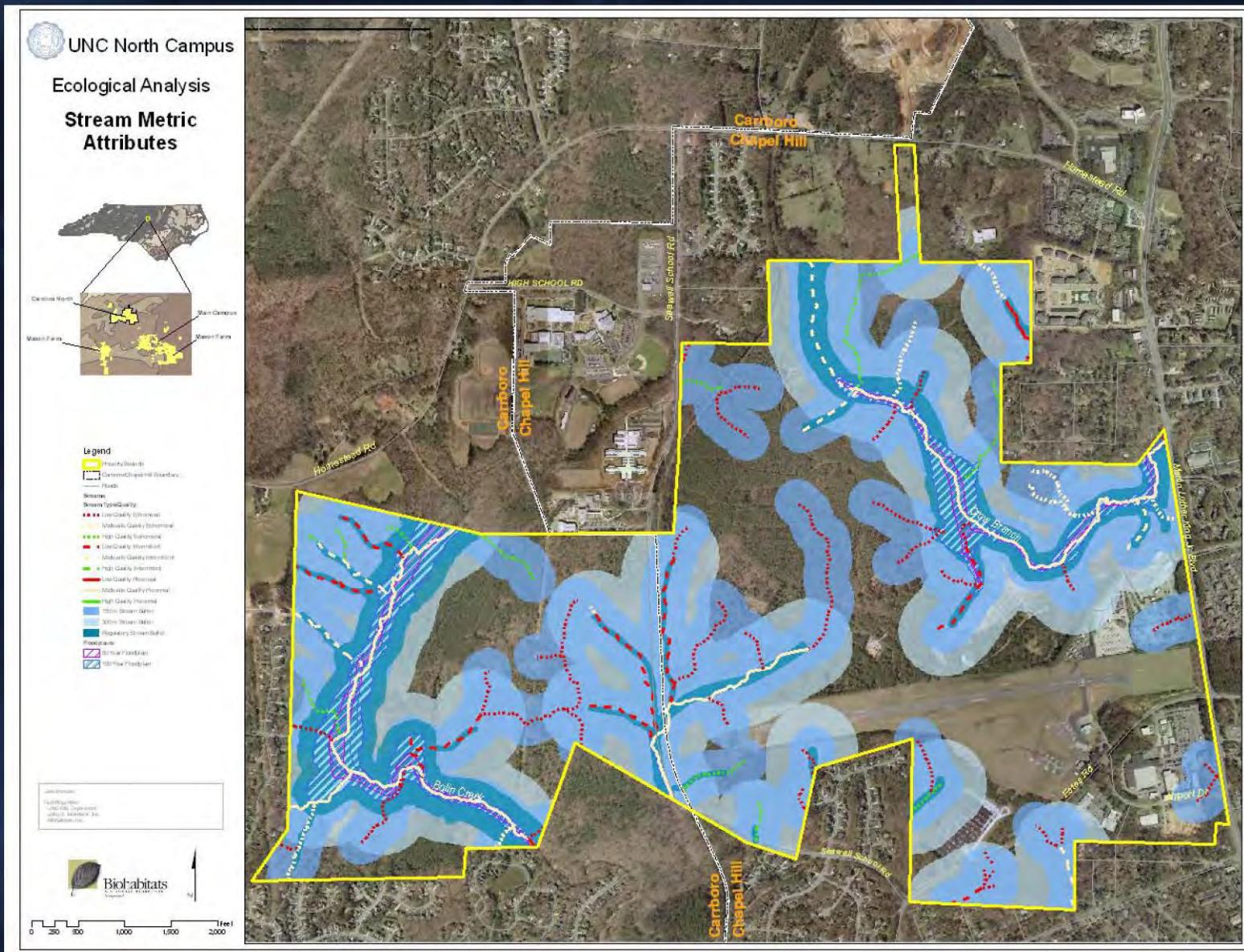


Analysis – Streams Metric Attributes

Site Attribute	Disturbance Will Result in No or Marginal Ecological Impact	Disturbance Acceptable If BMPs or Restrictions Are Applied	Disturbance will Compromise Ecological Integrity	Regulatory Restrictions or Conservation Area	Land Suitability Index*
	No-0 pts	Marg-1 pt	2 Points	3 Points	+1 Point
Streams					
Hydrologic Regime¹					
Ephemeral	1				1
Intermittent		2		1	3
Perennial			3	1	4
Buffers²					
Regulatory Buffer		2		1	3
150 m Conservation Buffer			3		3
300 m Conservation Buffer	1				1
Floodplains³					
Regulatory 100 yr floodplain		2		1	3
Morphological 50 yr floodplain			3		3
Aquatic Habitat⁴					
Aquatic Habitat-High Quality			3	1	4
Aquatic Habitat-Mod Quality		2		1	3
Aquatic Habitat-Low Quality	1			1	2

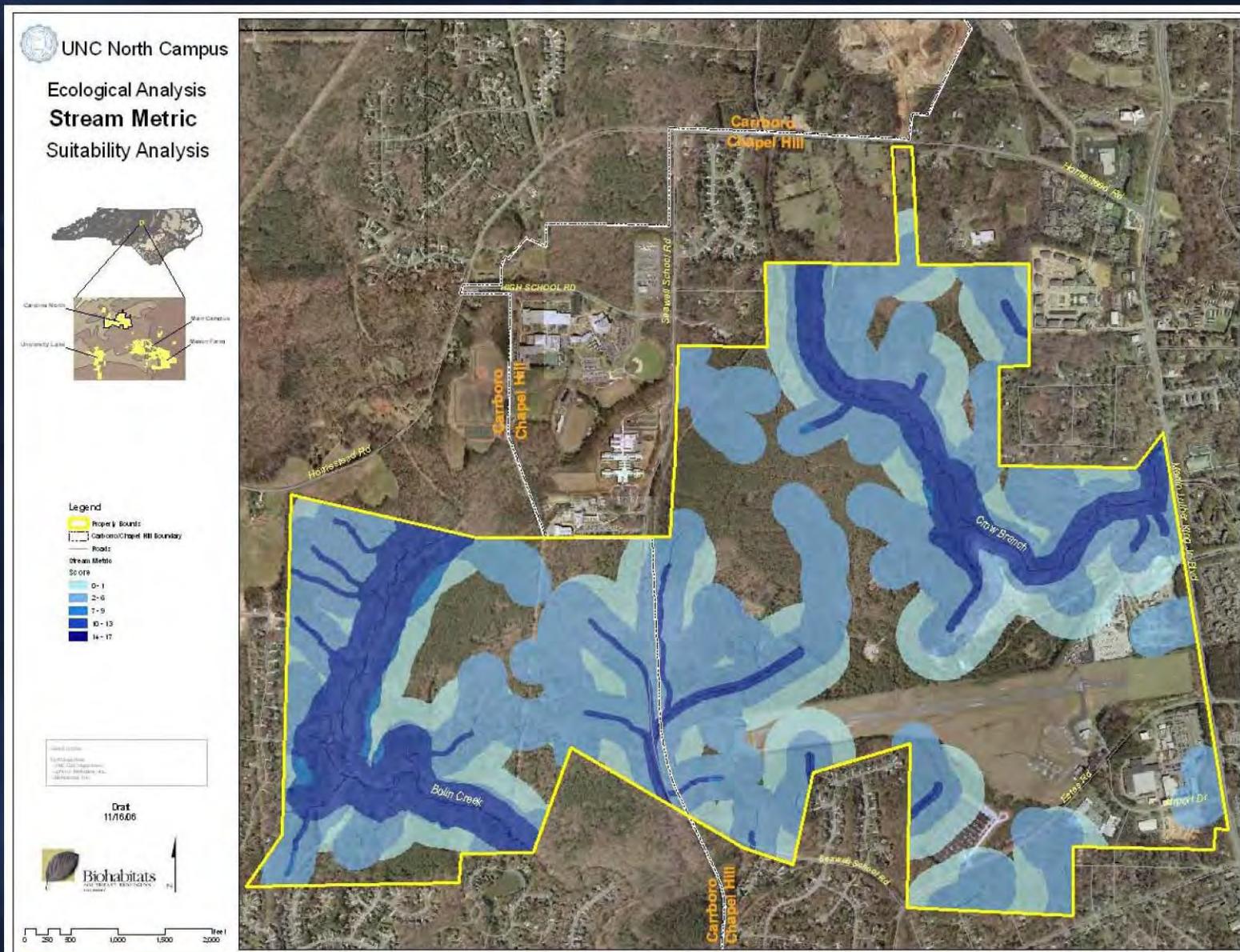
Carolina North Ecological Assessment

Analysis – Stream Metric Attributes



Carolina North Ecological Assessment

Analysis – Stream Metric Suitability Analysis

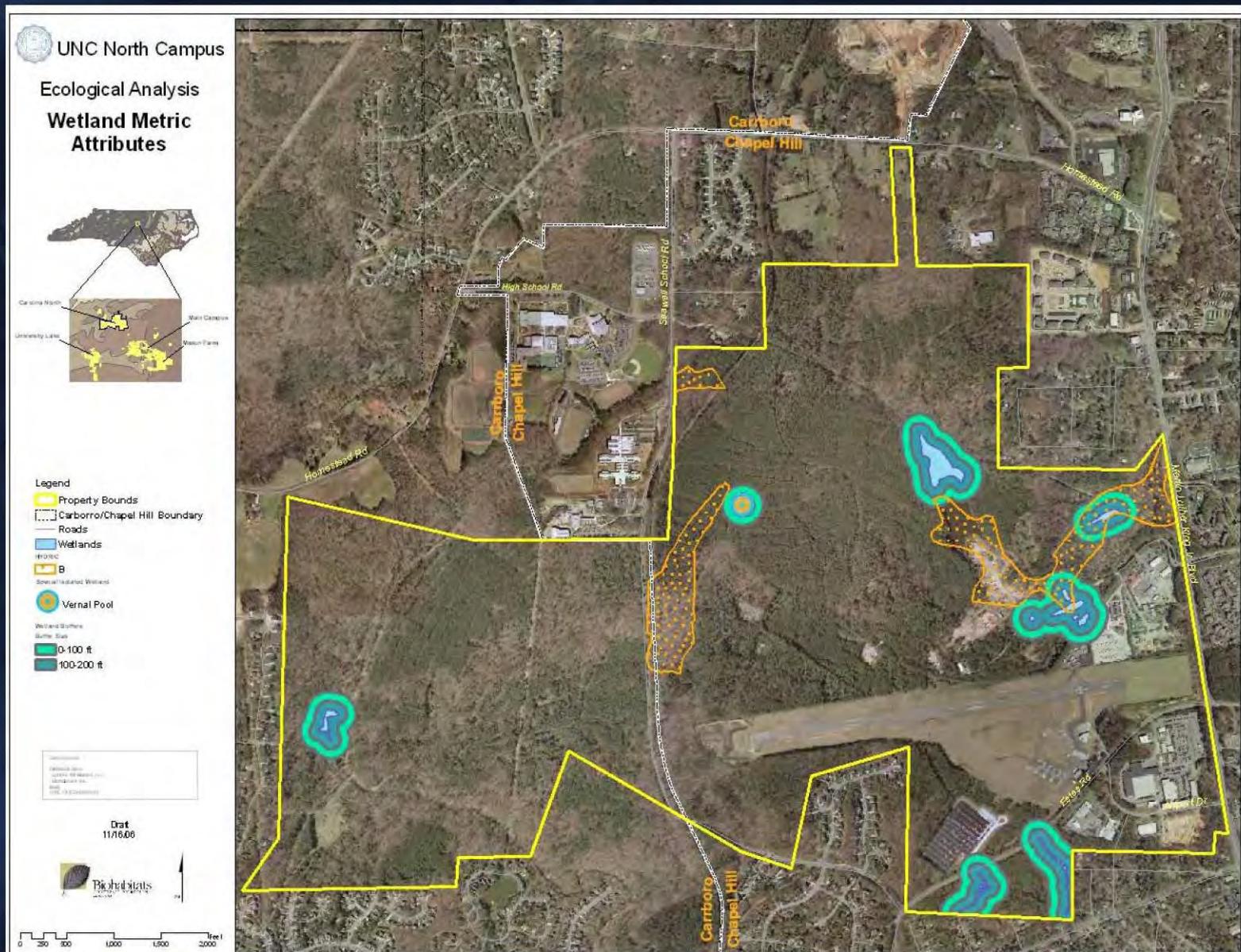


Analysis – Wetlands Metric Attributes

Site Attribute	Disturbance Will Result in No or Marginal Ecological Impact	Disturbance Acceptable If BMPs or Restrictions Are Applied	Disturbance will Compromise Ecological Integrity	Regulatory Restrictions or Conservation Area	Land Suitability Index*
	No-0 pts	Marg-1 pt	2 Points	3 Points	+1 Point
Wetlands⁵					
Hydric Soils					
Hydric Soils			3	1	4
Non-hydric soils	0				0
Wetland Size					
Area < 0.1 ac		2			2
Area 0.1-33 ac		2		1	3
Area > 0.33 ac			3	1	4
Special Isolated Wetland Type					
Vernal Pool			3	1	4
Springs and Seeps			3	1	4
Wetland Buffer⁶					
0-100' Conservation Buffer				3	3
100'-200' Conservation Buffer		2			2

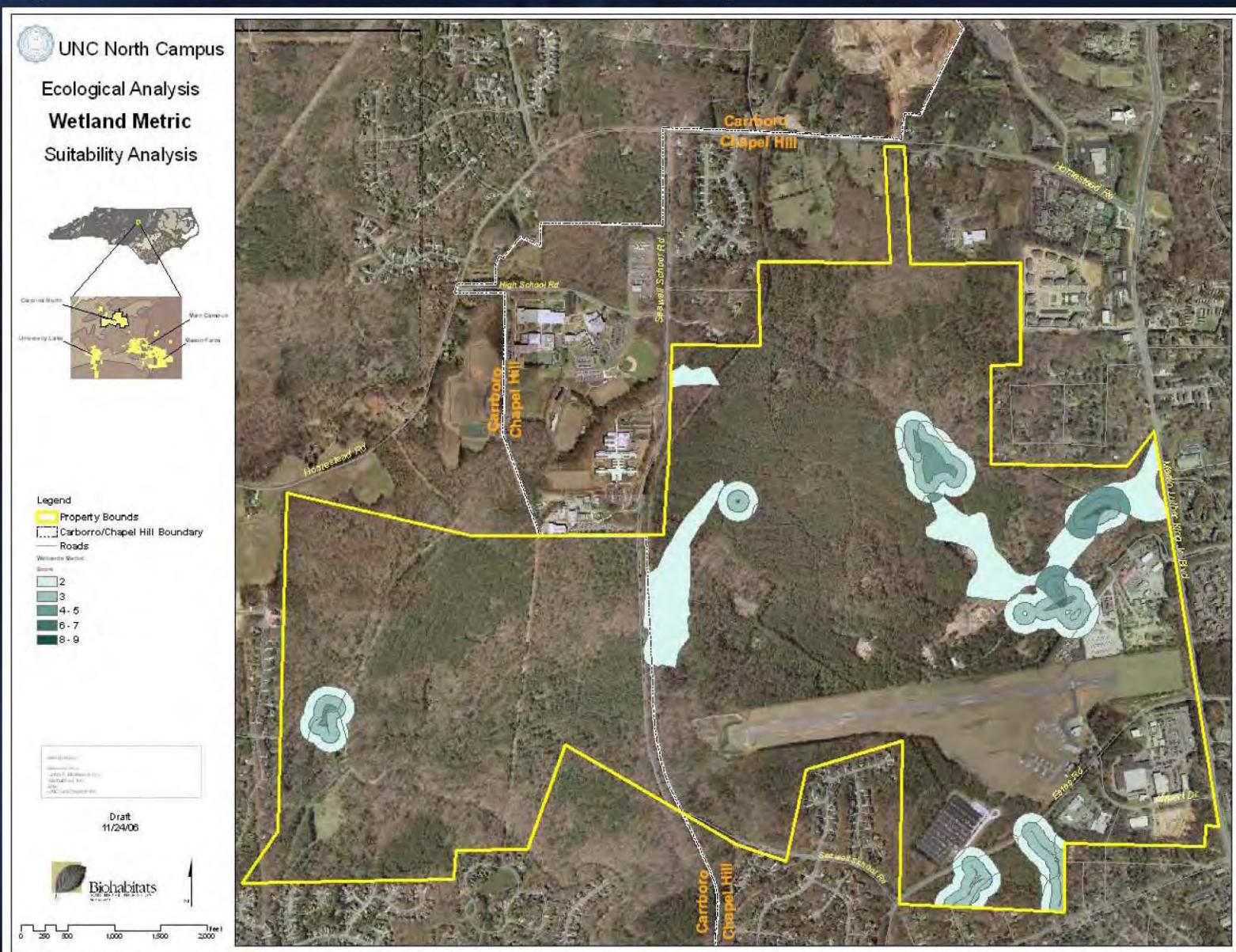
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Analysis – Wetland Metric Attributes



Carolina North Ecological Assessment

Analysis – Wetland Metric Suitability Analysis

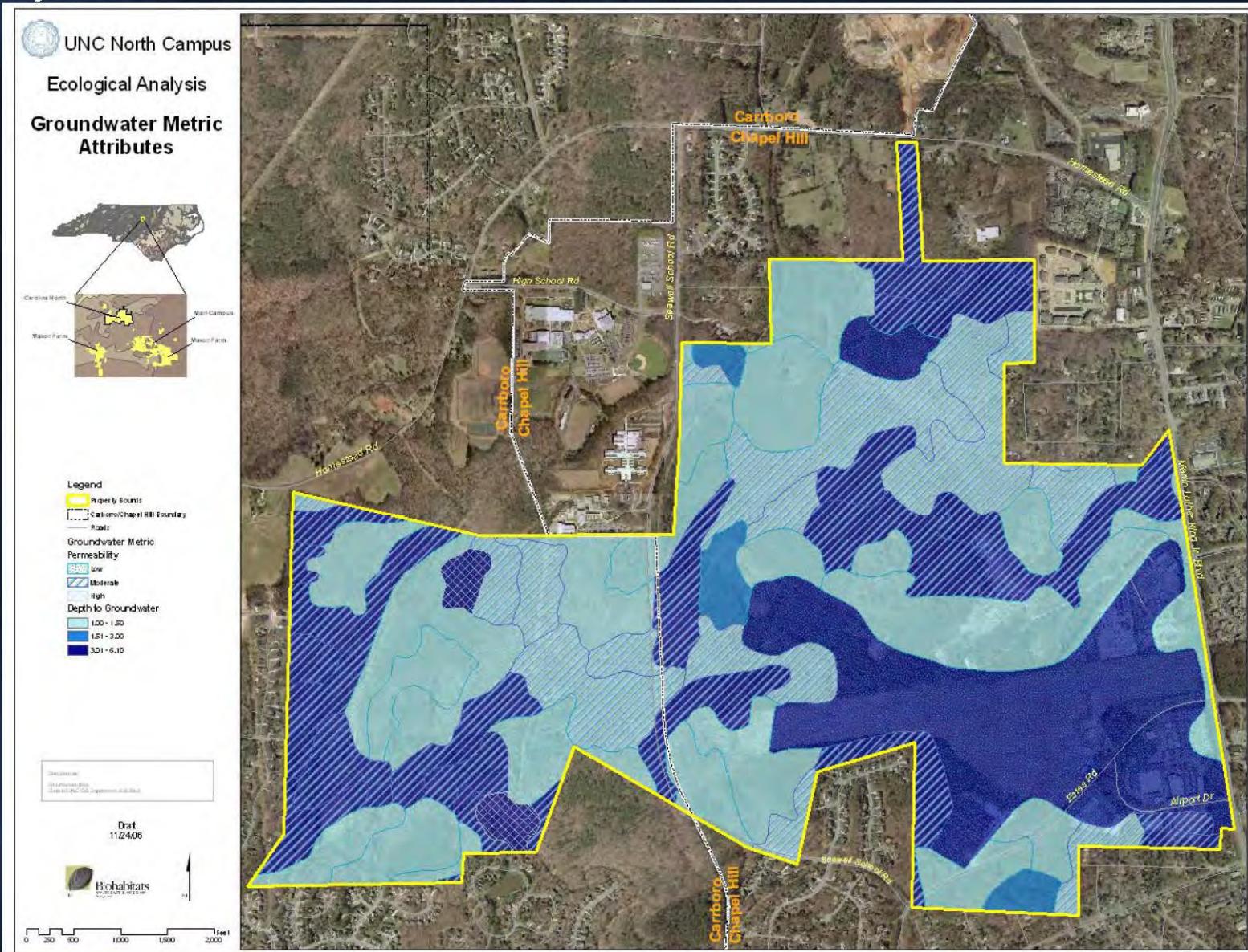


Analysis – Groundwater Metric Attributes

Site Attribute	Disturbance Will Result in No or Marginal Ecological Impact	Disturbance Acceptable If BMPs or Restrictions Are Applied	Disturbance will Compromise Ecological Integrity	Regulatory Restrictions or Conservation Area	Land Suitability Index*
	No-0 pts	Marg-1 pt	2 Points	3 Points	+1 Point
Groundwater⁷					
Recharge Zones					
High Soil Permeability/Recharge Zone			2		2
Mod. Soil Permeability/Recharge Zone	1				1
Low Soil Permeability/Recharge Zone	0				0
Depth to Groundwater					
Depth to Groundwater <1.5'				3	3
Depth to Groundwater 1.5'-4'			2		2
Depth to Groundwater >4'	0				0

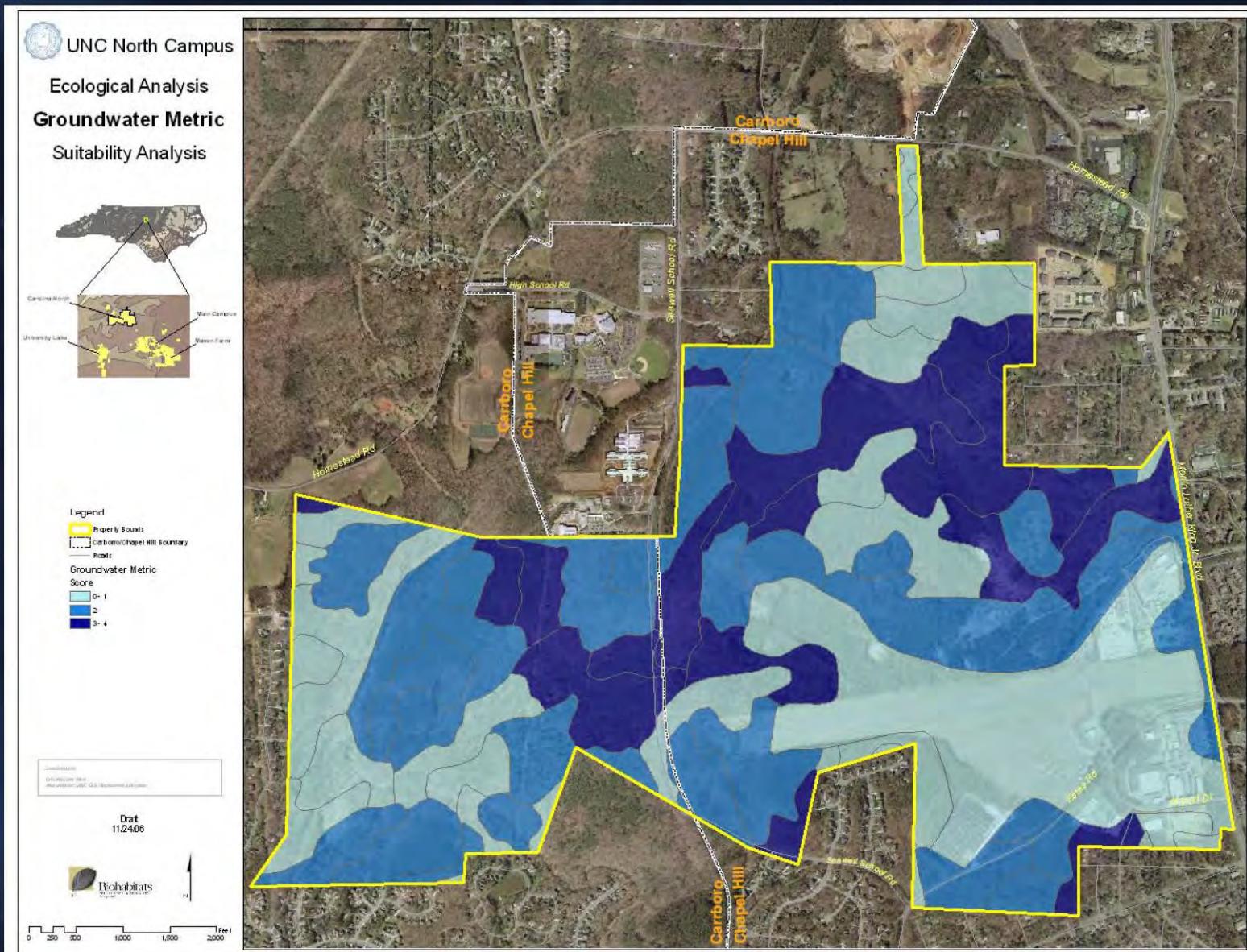
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Analysis – Groundwater Metric Attributes



Carolina North Ecological Assessment

Analysis – Groundwater Metric Suitability Analysis

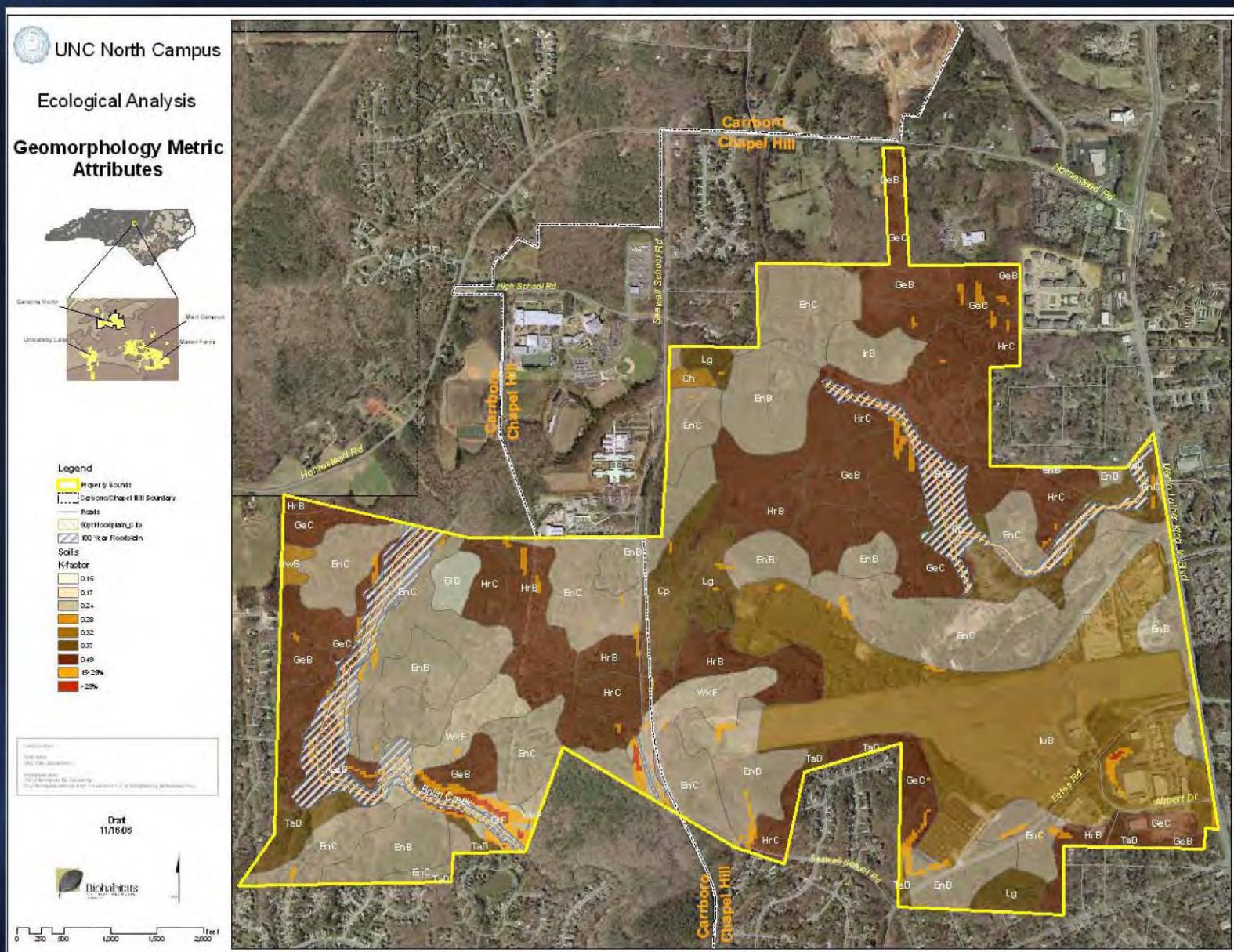


Analysis – Geomorphology Metric Attributes

Site Attribute	Disturbance Will Result in No or Marginal Ecological Impact	Disturbance Acceptable If BMPs or Restrictions Are Applied	Disturbance will Compromise Ecological Integrity	Regulatory Restrictions or Conservation Area	Land Suitability Index*
	No-0 pts Marg-1 pt	2 Points	3 Points	+1 Point	
Geomorphology					
Erodability⁷					
Erodability K Factor <0.35		2			2
Erodability K Factor >0.35			3		3
Slope					
Slopes 0-15%	1				1
Slopes 15-25%		2			2
Slopes >25%			3	1	4
Floodplain					
Morphological 50 yr floodplain			3	1	4

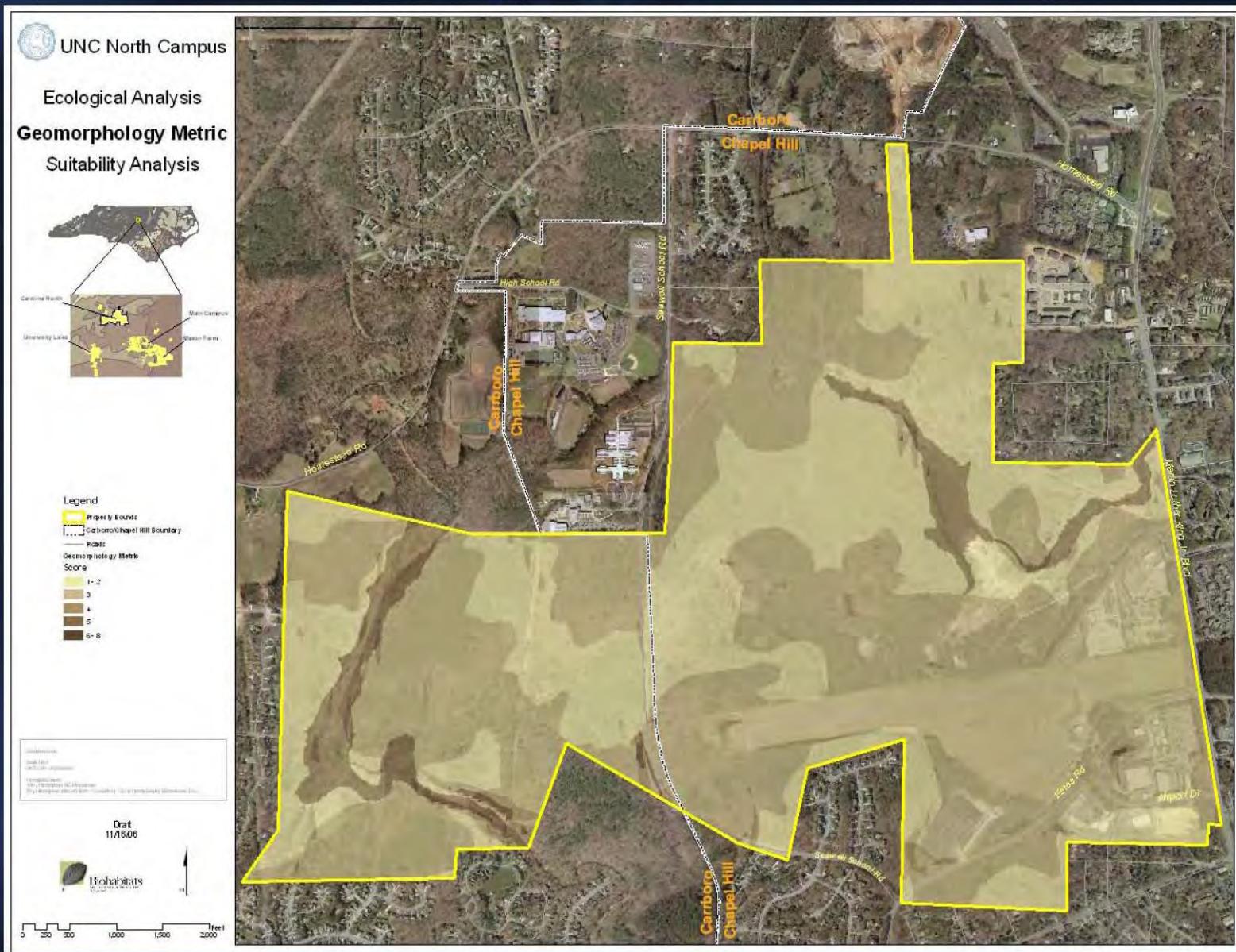
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Analysis – Geomorphology Metric Attributes



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Analysis – Geomorphology Metric Suitability Analysis

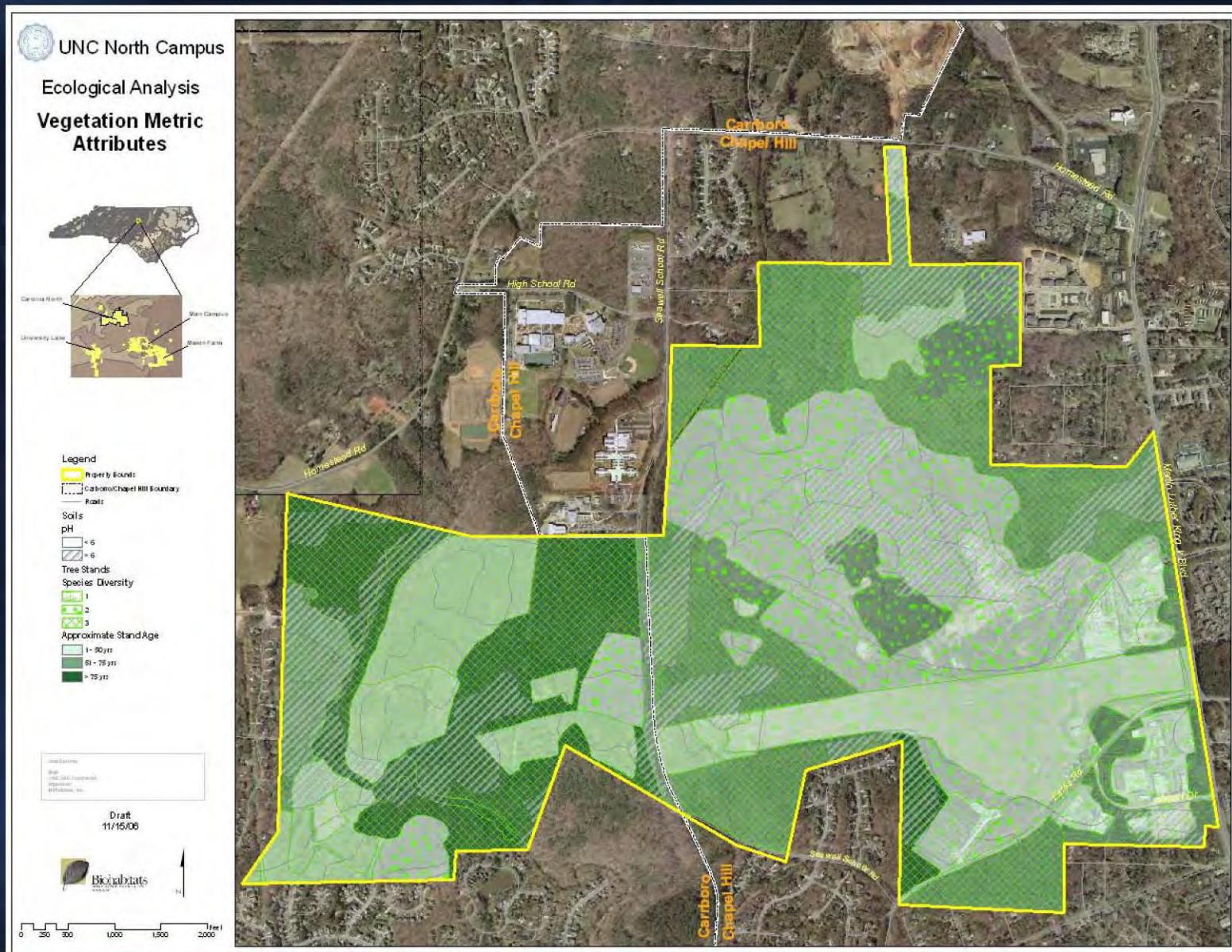


Analysis – Vegetation Metric Attributes

Site Attribute	Disturbance Will Result in No or Marginal Ecological Impact	Disturbance Acceptable If BMPs or Restrictions Are Applied	Disturbance will Compromise Ecological Integrity	Regulatory Restrictions or Conservation Area	Land Suitability Index*
	No-0 pts Marg-1 pt	2 Points	3 Points	+1 Point	
Vegetation					
Rare Species					
RTE Species Location			3	1	4
RTE Potential Habitat		2			2
Tree Age					
Tree Age Class 0-50 yrs	1				1
Tree Age Class 51-75 yrs		2			2
Tree Age Class >75 yrs			3		3
Tree Species Abundance⁸					
Relative Species Abundance - High			3		3
Relative Species Abundance - Mod.		2			2
Relative Specie Abundance - Low	1				1

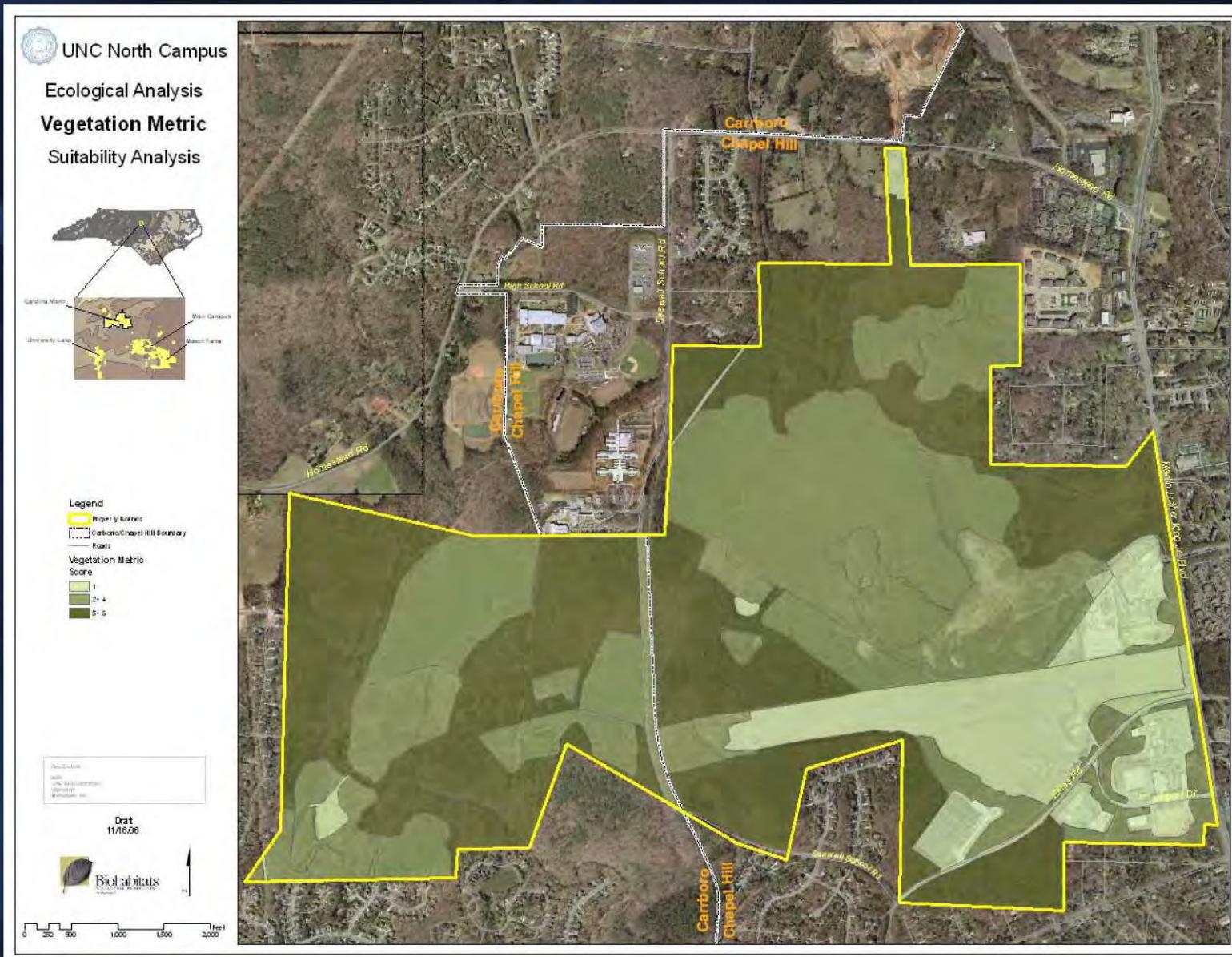
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Analysis – Vegetation Metric Attributes



Carolina North Ecological Assessment

Analysis – Vegetation Metric Suitability Analysis

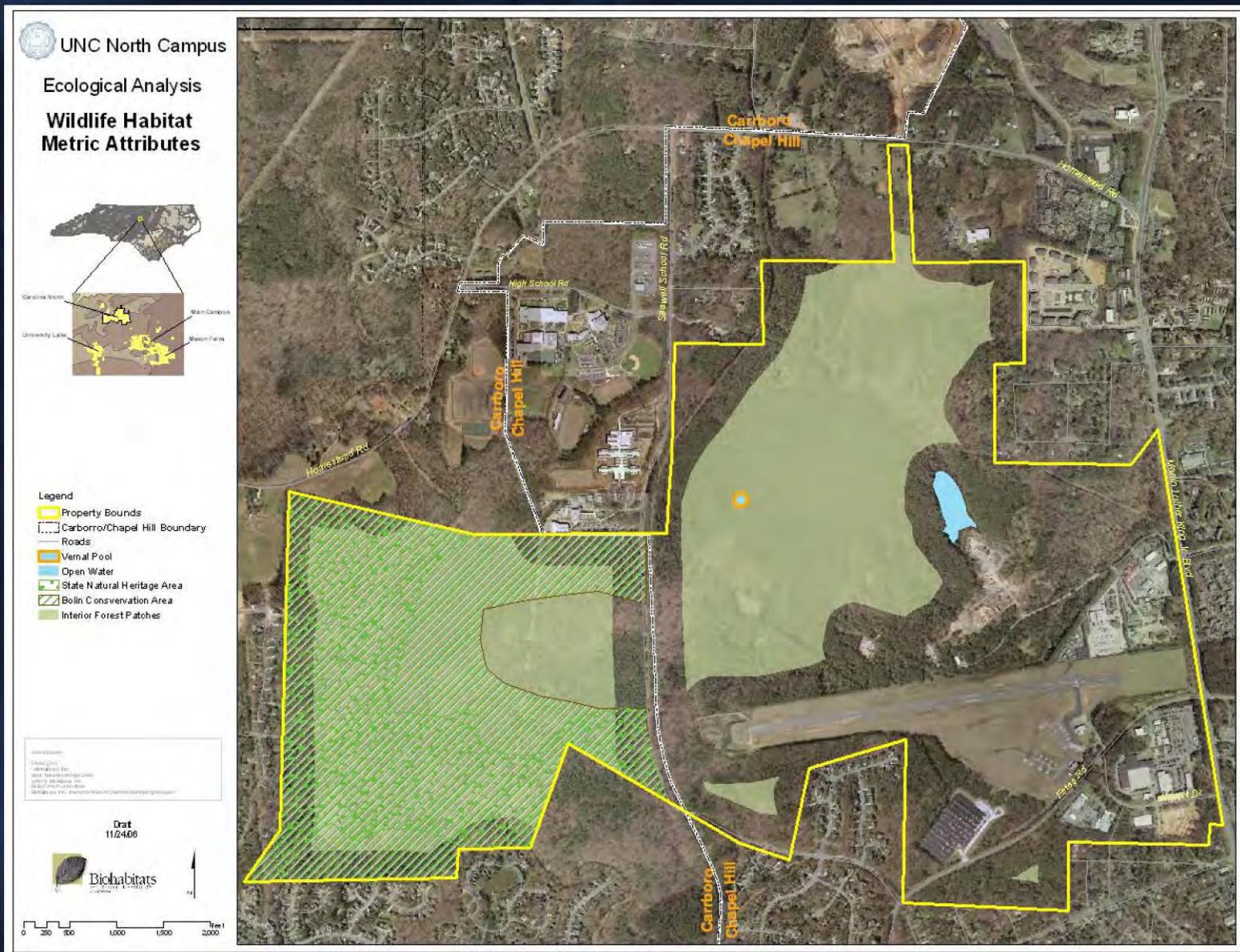


Analysis – Landscape Ecology Metric Attributes

Site Attribute	Disturbance Will Result in No or Marginal Ecological Impact	Disturbance Acceptable If BMPs or Restrictions Are Applied	Disturbance will Compromise Ecological Integrity	Regulatory Restrictions or Conservation Area	Land Suitability Index*
	No-0 pts	Marg-1 pt	2 Points	3 Points	+1 Point
Landscape Ecology					
Corridor Regional Importance⁹					
Primary Corridors				3	3
Secondary Corridors			2		2
Isolated Corridors	1				1
Corridor Width					
Site Corridors 0-150 meters				3	3
Site Corridors 151-300 meters		2			2
Corridor Structural Integrity					
Solid->90% forest cover				3	3
Porous-50-90% forest cover		2			2
Stepping Stone-<50% forest cover	1				1
Total Patch Size¹⁰					
Forested Habitat Patch > 40 ac				3	3
Forested Habitat Patch 25-39 ac		2			2
Forested Habitat Patch <25 ac	1				1
Interior Patch Size¹⁰					
Forested Habitat Patch > 40 ac				3	3
Forested Habitat Patch 25-39 ac		2			2
Forested Habitat Patch 0-24 ac	1				1

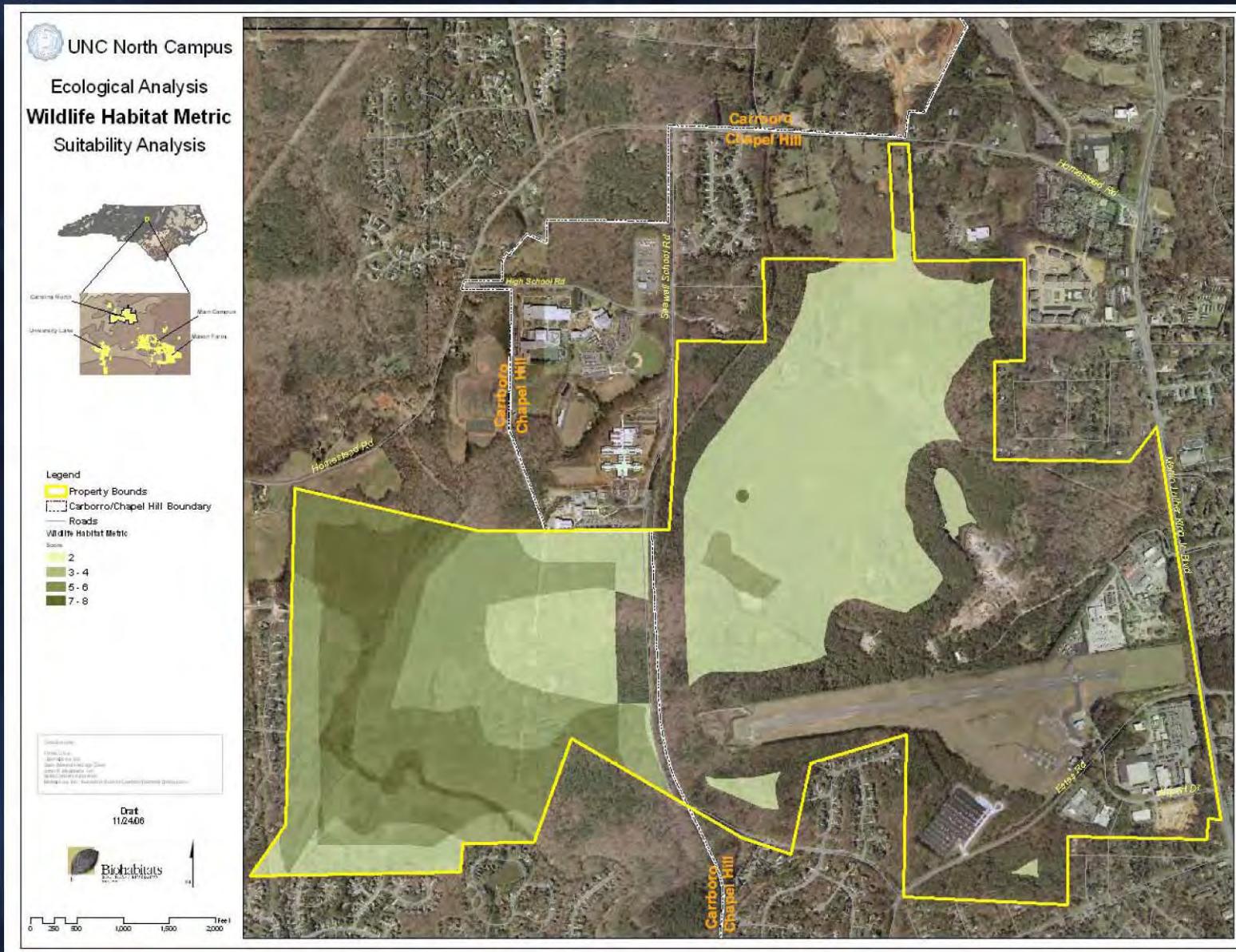
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Analysis – Wildlife Habitat Metric Attributes



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Analysis – Wildlife Habitat Metric Suitability Analysis

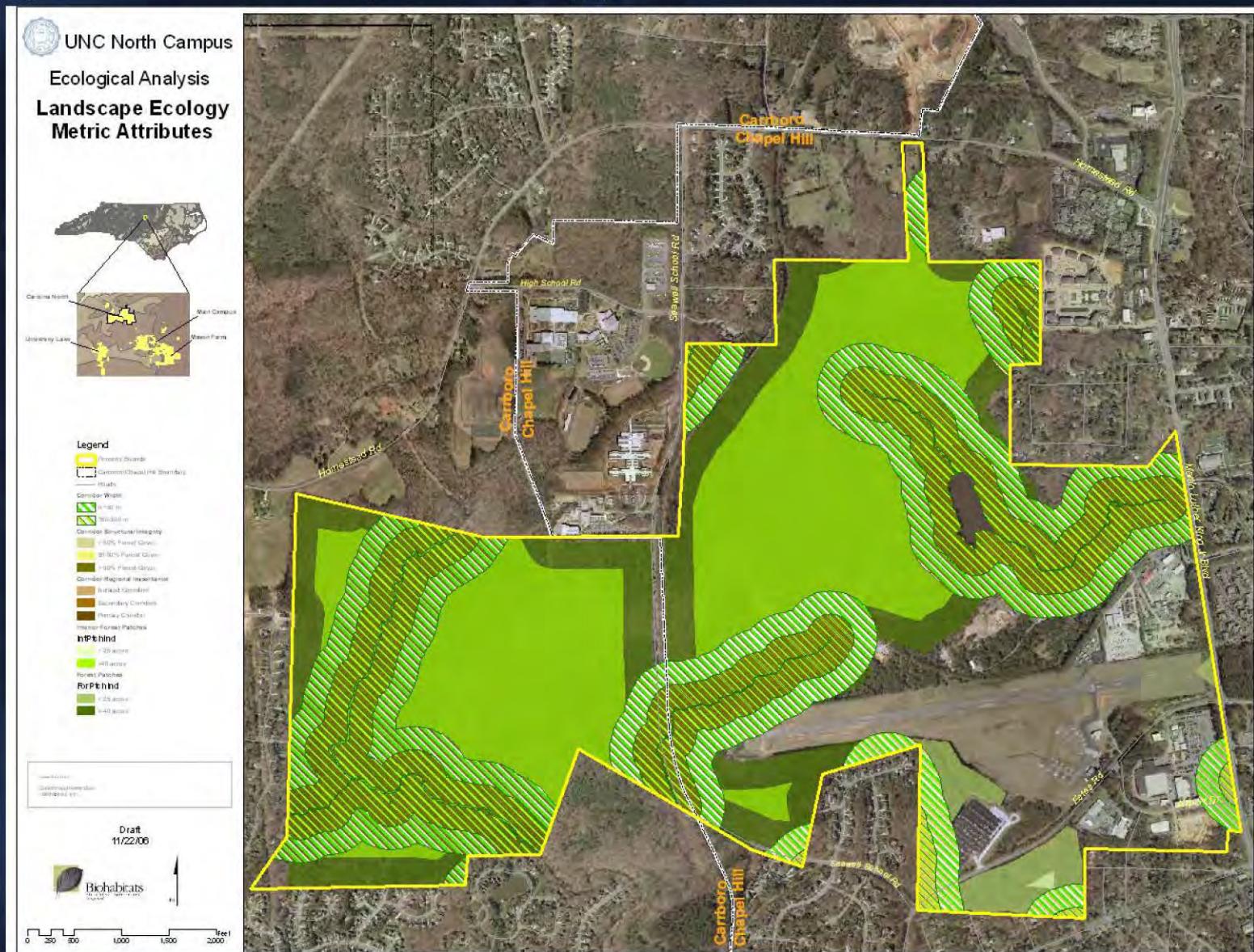


Analysis – Wildlife Metric Attributes

Site Attribute	Disturbance Will Result in No or Marginal Ecological Impact	Disturbance Acceptable If BMPs or Restrictions Are Applied	Disturbance will Compromise Ecological Integrity	Regulatory Restrictions or Conservation Area	Land Suitability Index*
	No-0 pts Marg-1 pt	2 Points	3 Points	+1 Point	
Wildlife Habitat					
Endangered Species Habitat¹¹					
Identified Critical Habitat			3	1	4
Rare, Threat. or Spec. Species Hab.					
Hardwoods > 50 yrs old		2			2
Hardwoods < 50 yrs old	1				1
Migratory Bird Habitat		2			2
Vernal Pool			3	1	4
Identified Natural Areas					
Nat. Her. Prog. or Other Designation		2			2
Cultural & Historic					

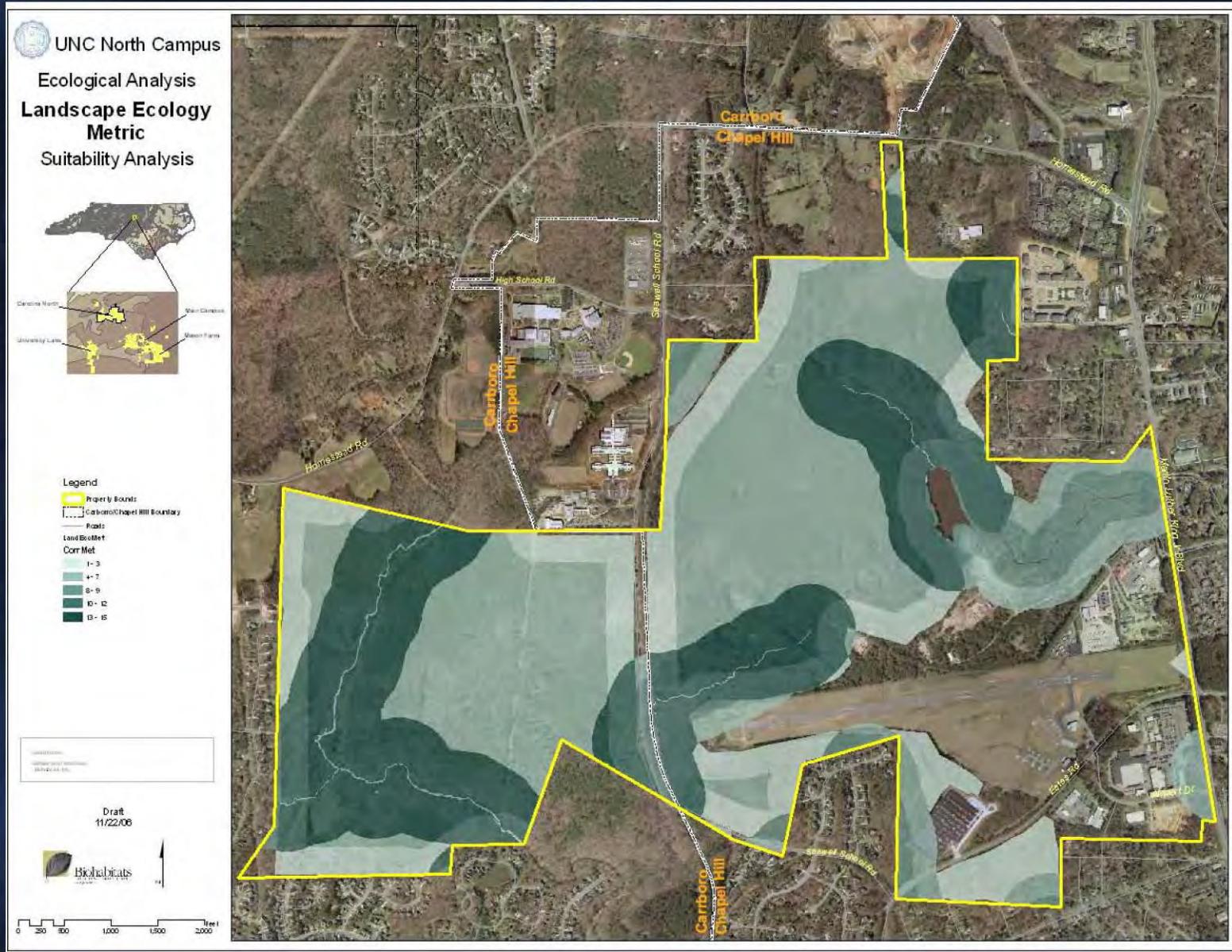
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Analysis – Landscape Ecology Metric Attributes



Carolina North Ecological Assessment

Analysis – Landscape Ecology Metric Suitability Analysis



Analysis – Cultural/Historical Metric Attributes

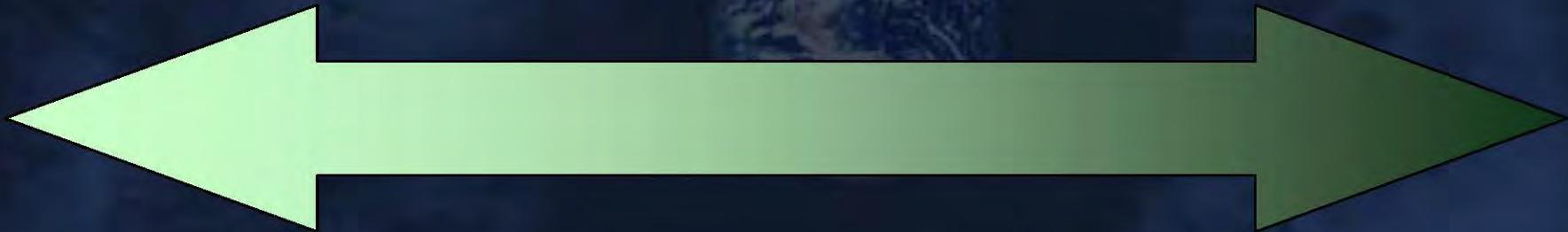
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	No-0 pts Marg-1 pt	2 Points	3 Points	+1 Point	
Cultural Areas					
Viewsheds					
Viewsheds - regional		2			2
Viewsheds - site		2			2
Historic Sites					
Nationally Registered Sites			3	1	4
Identified Cult and Hist. Occurrences		2			2

Analysis – Land Suitability Ranking

Disturbance will result
in no or marginal
ecological impact

Disturbance acceptable
if BMPs or restrictions
are applied

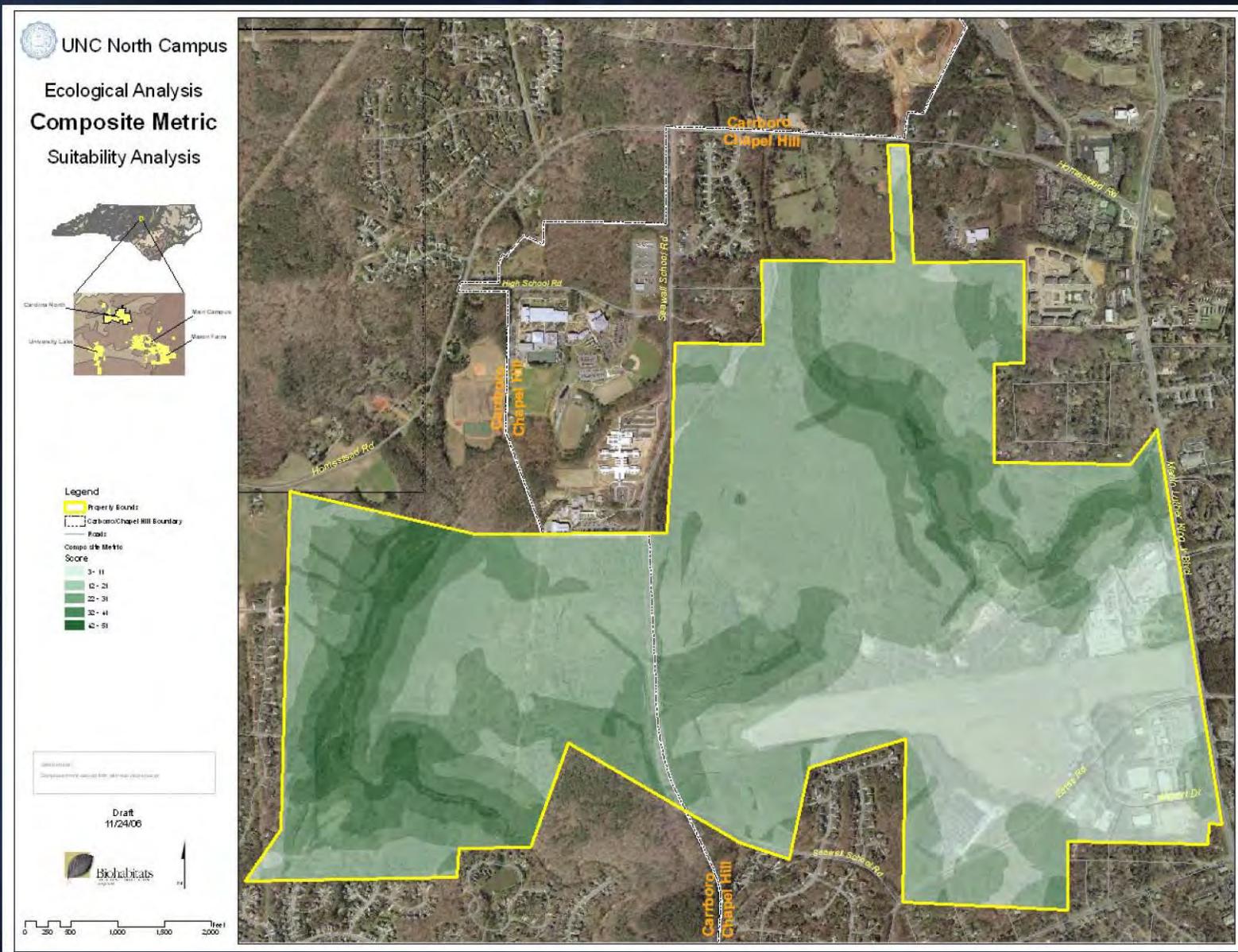
Disturbance will
compromise ecological
integrity



Regulatory
restrictions or
conservation area

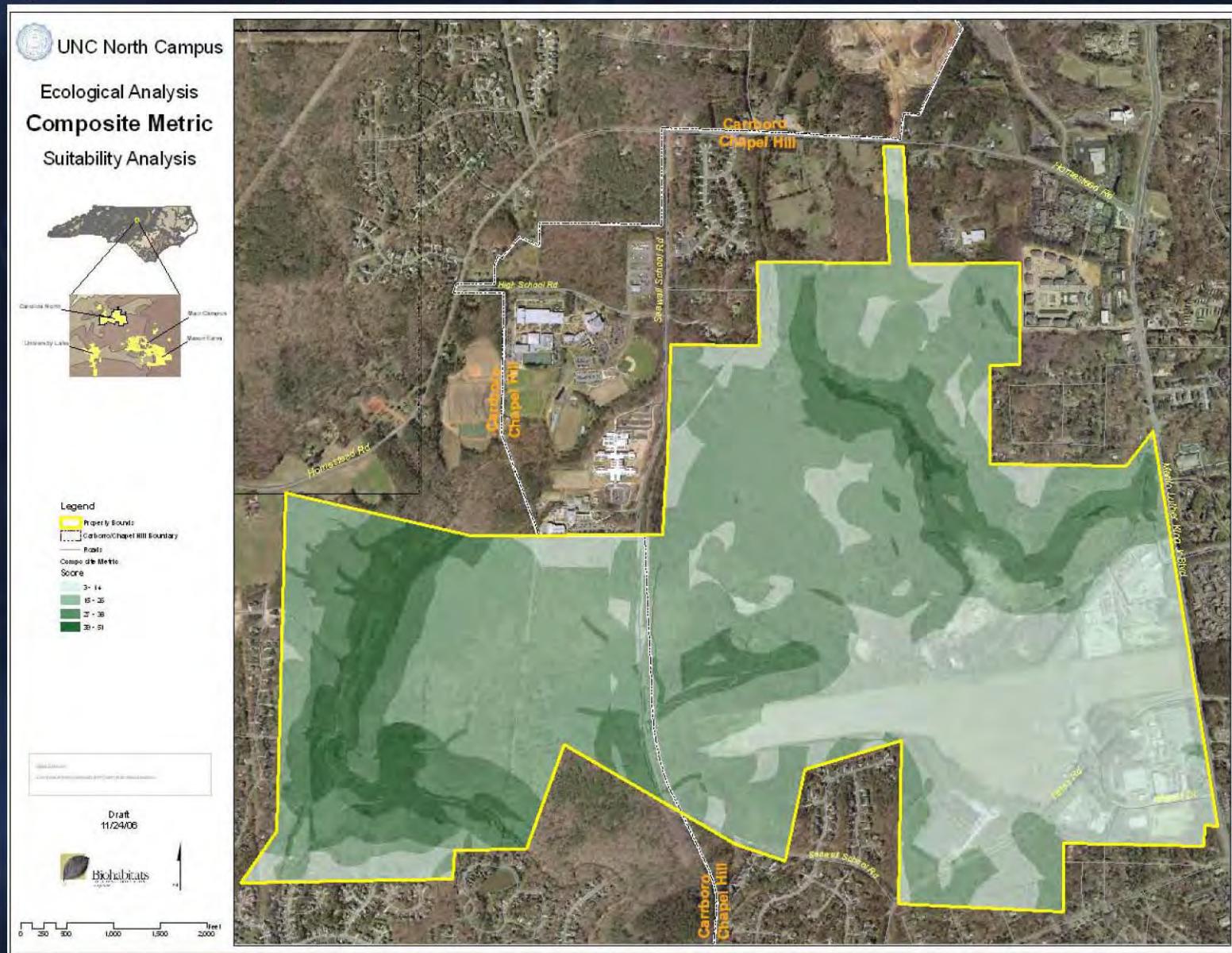
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Analysis – Composite Metric Suitability Analysis (5 scale)



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Analysis – Composite Metric Suitability Analysis (4 scale)



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Analysis – Composite Metric Suitability Analysis (3 scale)

