

## **Watershed Management Plans Prioritization Discussion for EAC Recommendation**

### **GMP Provisions**

The 2006 Evaluation and Appraisal Report Growth Management Plan (GMP) amendments set the timeline and give some guidelines for development of the plans. Due to the tight schedule set in the GMP a prioritization of plans is to be completed by January 2008 and the plans are to be completed by 2010. Included in the prioritization process will be an evaluation of areas for which Watershed Management Plans (WMP) are not necessary based on current or past watershed management planning efforts. The prioritization is to be based on where the development growth potential is the greatest, and will impact the greatest amount of wetlands and listed species habitat. The schedule and priorities shall also be coordinated with the Federal and State agency plans that address Total Maximum Daily Loads (TMDLs).

The WMP will be developed utilizing stake holder groups for input and discussion. The Environmental Advisory Committee (EAC) will serve as the primary public committee for recommendations to the Board of County Commissioners. Stakeholder comments will be summarized to the EAC. There will be a presentation of the GIS analysis to the Stakeholder groups September 27, 2007. The schedule for the EAC Prioritization recommendation is:

- Review and discuss GIS analysis of basins October 3, 2007;
- Recommendation to Prioritize Basins November 7, 2007.

### **GIS Analysis for Prioritization**

The watershed basin boundaries developed by the FDEP for the TMDL assessment (Figure 1) will be used for the analysis. These basin boundaries differ slightly from those used by the SFWMD for the SWFFS and the County for the Floodplain Management Plan. The differences will be resolved prior to any watershed modeling. The FDEP watersheds will be used to prioritize the watersheds growth potential, wetlands, listed species habitat, and water quality impairments. The most recent GIS data available was utilized for this analysis, however, most of this data is at least 5 years old. A discussion of the data limitations is included with each section. Each watershed was ranked for each parameter considered. After all of the analysis was completed an average ranking was calculated.

There are watersheds identified for the beaches and Gulf by FDEP. There is very little land within these areas so they typically rank low in the GIS analysis. The beach watersheds are separated in the FDEP basin data primarily for assessment of bacterial related beach closings.

Meetings with the stakeholders and the EAC in September and October resulted in some recommendations for the analysis. The GIS analysis will be developed by watershed. The Growth Potential analysis will include considerations for the Flowway Stewardship areas, allowable density of development units, and amount of intensive agriculture. The Listed Species factors will use one of Florida Fish and Wildlife Conservation Commission's (FFWCC) more recent data sets. There will be additional analysis for a potential restoration area and a discussion of subjective factors.

### **Growth Potential**

The analysis of growth potential utilized the Collier County Property Appraisers GIS data for buildings and parcels. The combined acreage of undeveloped private parcels were used as the measure of "Growth Potential". The building data is from January 2006 making this the most current data layer. Parcels without buildings were selected and then the county, state, federal, and private conservation lands and the Flowway, and Stewardship Sending areas were removed. Because of future development potential agricultural lands with buildings on parcels greater than 40 acres were added back (Figure 2). Undeveloped private parcels within the conservation lands were not removed. Parcels within the Flowway and Stewardship Sending areas were not added back because of the existing development restrictions. All of these parcels are within Collier County so the percent of the basin that is undeveloped within the county was calculated and the basins were ranked by descending percentage. That is the basin with the highest percentage undeveloped land was ranked 1 (Table 1). There are portions of the Rural Fringe and the Rural Lands that have incentive programs to transfer development from environmentally sensitive areas to less sensitive areas. Only the areas with approved applications were removed from the un-developed areas.

Only one of the watersheds has greater than 50 % developable land. Six of the watersheds had 5 % or less developable land. To add a development unit density factor the Future Land Use allowable density was calculated for the undeveloped parcels. The number of units per watershed was calculated by multiplying the density by the acreage. For all densities greater than 4 units per acre a density of 6 units per acre was used because the areas are small and often would contain commercial or industrial areas as well. A rank was determined for the density based on the estimated potential units.

To do analysis for the portions of the basins outside the county the South Florida Water Management Department (SFWMD) Land Cover data for 2000 was analyzed (Figure 3). All land covers except urban and transportation were considered. The ranking was based on the percent of the watershed that was identified. To discount the amount of intensive agriculture to this factor another parameter was developed for native habitat. The acreage for range, forest and wetland was calculated as a percent of the basin and ranked. The Growth Potential ranking was developed by averaging the un-developed parcel, potential development units, un-developed land cover, and native habitat rankings. The summary of the data and rankings are in Table 1. There was considerable agreement of the 4 factors, the ranking of only 4 of the 15 watersheds varied by more than 3 .

## **Wetlands**

The USFWS National Wetland Inventory (NWI) was utilized for the wetlands analysis. The data is derived from aerial photographic analysis and is suitable for planning studies. (This data does not include impacts of lowered water tables from canals and wells and so it is not equivalent to state or federal jurisdictional wetlands). Water in the gulf, existing conservation lands or stewardship areas were not considered in this analysis since they are not directly impacted by development (Figure 4). The 1999 NWI data was not complete so I filled in the missing areas with the 1990 data. The only resulting data gaps were some small areas outside the county. The watershed acreage and rank are in Table 2.

## **Listed Species Habitat**

The Species Richness model was developed by the FFWCC in 2000 to identify habitat value for wildlife. The model is based on 130 focal species including wildlife listed by the FFWCC as endangered, threatened, or a species of special concern. This data was utilized to identify and rank listed species habitat (Figure 5). Land cover is ranked from 0 through 10 based on the number of species it is likely to support. The conservation, flowway, and stewardship sending areas were removed from consideration since they will not be developed. The average species richness was calculated for the watersheds and the listed species ranking is based on the results (Table 2).

## **Impaired Water Quality**

FDEP will be identifying basins that do not meet state standards for water quality. They have only released draft data at this time and the next update is not anticipated until November 22, 2007. The water quality impairment factor was developed by summing the number of basin impairments by watershed (Table 2).

## **Potential Restoration**

Hydric Flatwoods from the SWFFS pre-development vegetation and the current restoration proposed projects were selected to represent potential restoration areas (Figure 6). The areas in conservation, stewardship, or current urban land cover were removed. The remaining acreage was summed by watershed in Table 2.

## **Subjective Factors**

Most of the new developments will be subject to more restrictive habitat and water quality standards. The Golden Gate Naples Bay watershed has the highest average ranking and is largely composed of older subdivisions that will not benefit from new regulations.

## **Summary**

The total basin acreage, the acreages, percents, and ranks for growth potential, wetlands, listed species habitat, water quality impairments and potential restoration are listed by basin in Table 3. I calculated an average rank based on the rankings of the 5 parameters considered. No subjective factors were identified that seem contrary to the average rank. The order of the basins in Table 3 is based on this average ranking.

If you have any questions or comments contact Mac Hatcher (239) 213-2954 or [machatcher@colliergov.net](mailto:machatcher@colliergov.net).

**Table 1.**

**WMP Watershed Analysis of Growth Potential**

		Collier County				FLU	FLU	Entire Basin						
		County	Parcels	Parcels	Parcels	Dev	Dev	Dev	Dev	Dev	Nat	Nat		
WATERSHED	Acres	Acres	Ac	% Cnty	Rank	Units	Units	LUC	LUC	LUC	Hab	Hab	Average	
Cocohatchee Corkscrew	145,927	98,634	38,916	39%	2	43,649	2	91,393	63%	1	26%	3	2.0	
Rookery Bay	107,675	99,684	33,092	33%	3	44,194	1	42,217	39%	4	29%	2	2.5	
Okaloacoochee-SR29	230,822	153,484	78,872	51%	1	37,162	3	129,898	56%	2	23%	5	2.8	
Golden Gate Naples														
Bay	87,533	86,442	24,989	29%	4	35,365	4	40,397	46%	3	35%	1	3.0	
Faka Union	86,939	86,937	18,928	22%	7	12,701	5	26,695	31%	5	24%	4	5.3	
Fakahatchee	150,177	150,177	43,134	29%	5	8,725	6	43,496	29%	6	16%	6	5.8	
Ten Thousand Islands	134,278	91,651	6,303	7%	10	2,048	8	6,403	5%	8	5%	8	8.5	
Marco Island	19,534	10,454	817	8%	8	2,555	7	280	1%	10	1%	10	8.8	
Naples	5,001	4,372	35	1%	13	139	10	444	9%	7	9%	7	9.3	
BCNP	705,549	513,717	2,183	0%	14	437	9	31,922	5%	9	2%	9	10.3	
Gulf	142,634	517	37	7%	9	36	11	13	0%	13	0%	12	11.3	
South Naples Beach	422	24	6	25%	6	24	12	4	1%	12	0%	15	11.3	
Marco Beach	1,201	107	1	1%	11	5	13	12	1%	11	1%	11	11.5	
Cochatchee Beach	1,462	23	0	1%	12	1	14		0%	15	0%	14	13.8	
Naples Beach	1,527	1		0%	15		15		0%	14	0%	13	14.3	

LUC analysis does not include Conservation lands ,  
Flowway or Sending Stewardship areas

Nat Hab - Native Habitat – Undev. range, forest, and wetlands

**Table 2**

**WMP Watershed Analysis of Wetlands and Listed Species Habitat**

	Watersheds		Wetland	Wetland	Wetland	FFWCC	FFWCC	FDEP	FDEP	Potential	Potential	Potential
	Entire	County	NWI	NWI	NWI	SP Rch	SP Rch	Impaired	Impaired	Rest	Rest	Rest
WATERSHED	Acres	Acres	Acres	%	Rank	Avg / Ac	Rank	Basins	Rank	ac	%	Rank
BCNP	705,549	513,717	201	0%	<b>13</b>	0.0	<b>15</b>	7	<b>2</b>	16,892	2%	<b>10</b>
Cochatchee Beach	1,462	23		0%	<b>15</b>	0.3	<b>12</b>	0	<b>13</b>	0	0%	<b>12</b>
Cocohatchee Corkscrew	145,927	98,634	18,036	12%	<b>6</b>	3.2	<b>3</b>	14	<b>1</b>	35,192	24%	<b>6</b>
Faka Union	86,939	86,937	13,107	15%	<b>5</b>	1.8	<b>7</b>	2	<b>6</b>	12,701	15%	<b>8</b>
Fakahatchee	150,177	150,177	16,491	11%	<b>7</b>	1.7	<b>8</b>	3	<b>5</b>	25,749	17%	<b>7</b>
Golden Gate Naples Bay	87,533	86,442	29,397	34%	<b>1</b>	4.0	<b>1</b>	7	<b>3</b>	41,740	48%	<b>1</b>
Gulf	142,634	517		0%	<b>14</b>	0.3	<b>11</b>	0	<b>9</b>		0%	<b>13</b>
Marco Beach	1,201	107	11	1%	<b>11</b>	2.3	<b>6</b>	0	<b>14</b>	438	36%	<b>3</b>
Marco Island	19,534	10,454	3,164	16%	<b>4</b>	1.1	<b>9</b>	1	<b>8</b>	7,103	36%	<b>4</b>
Naples	5,001	4,372	1,028	21%	<b>3</b>	2.5	<b>4</b>	0	<b>11</b>	76	2%	<b>11</b>
Naples Beach	1,527	1	2	0%	<b>12</b>	0.0	<b>14</b>	0	<b>12</b>		0%	<b>14</b>
Okaloacochee-SR29	230,822	153,484	18,808	8%	<b>8</b>	2.4	<b>5</b>	1	<b>7</b>	78,838	34%	<b>5</b>
Rookery Bay	107,675	99,684	30,334	28%	<b>2</b>	3.3	<b>2</b>	5	<b>4</b>	40,856	38%	<b>2</b>
South Naples Beach	422	24	18	4%	<b>10</b>	0.2	<b>13</b>	0	<b>15</b>		0%	<b>15</b>
Ten Thousand Islands	134,278	91,651	8,218	6%	<b>9</b>	0.6	<b>10</b>	0	<b>10</b>	6,166	5%	<b>9</b>

NWI analysis does not include Conservation lands, Flowway, or Stewardship Sending areas.

FFWCC Species Richness (SP Rch) analysis does not include Conservation lands, Flowway, or Stewardship Sending areas and is limited to the County.

Restoration includes pre-development hydric flatwoods not in current urban use and Restoration Projects from SWFFS (July 2007).

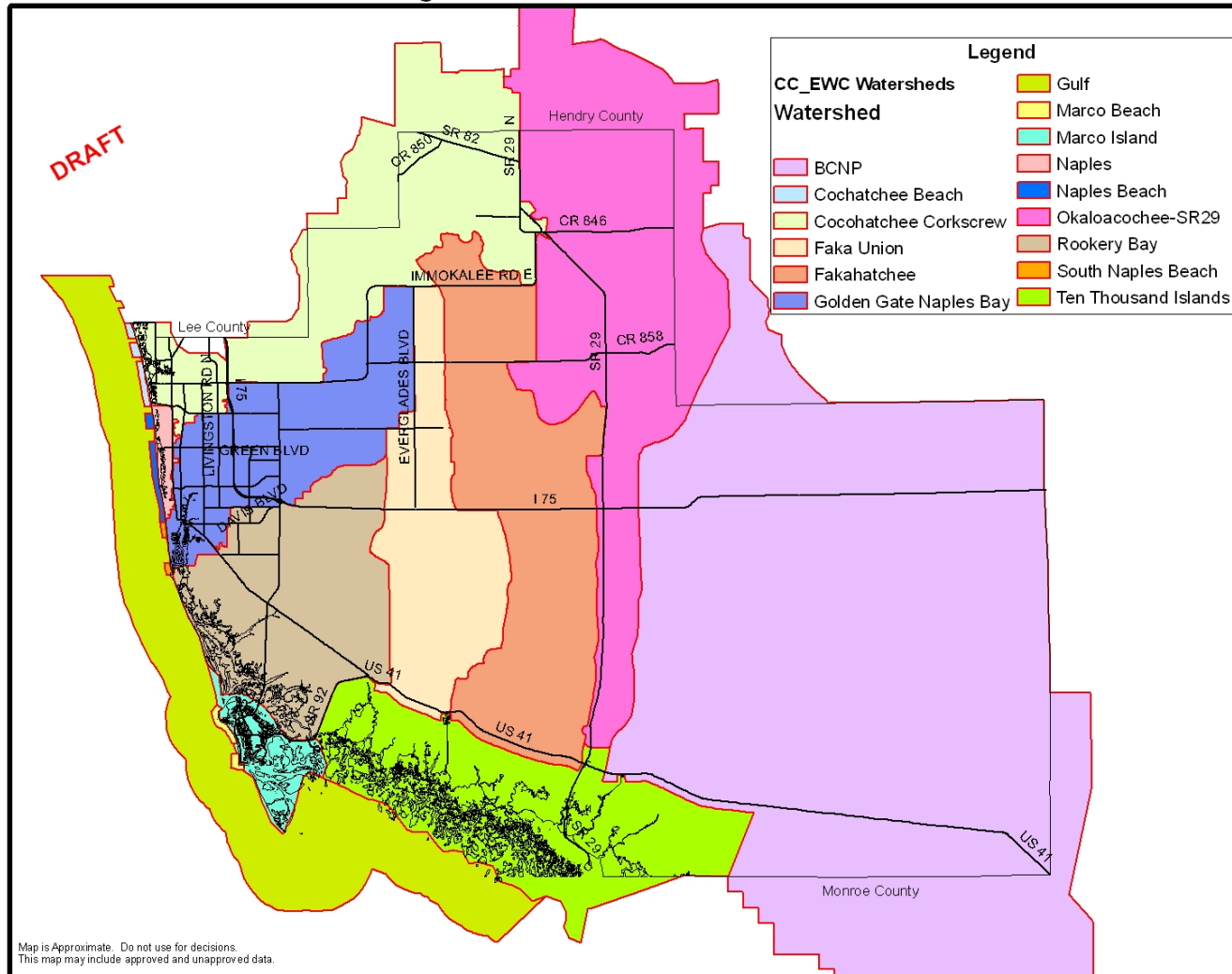
Table 3

**WMP Watershed Prioritizing Rankings**

<b>WATERSHED</b>	<b>Acres</b>	<b>County Acres</b>	<b>GrwthPot Rank</b>	<b>Wetland NWI Rank</b>	<b>FFWCC SP Rch Rank</b>	<b>WQ Impard Rank</b>	<b>Restoration Rank</b>	<b>Avg Rank</b>
<b>Golden Gate Naples Bay</b>	87,533	86,442	3.0	1	1	3	1	<b>1.8</b>
<b>Rookery Bay</b>	107,675	99,684	2.5	2	2	4	2	<b>2.5</b>
<b>Cocohatchee Corkscrew</b>	145,927	98,634	2.0	6	3	1	6	<b>3.6</b>
<b>Okaloacoochee-SR29</b>	230,822	153,484	2.8	8	5	7	5	<b>5.6</b>
<b>Faka Union</b>	86,939	86,937	5.3	5	7	6	8	<b>6.3</b>
<b>Fakahatchee</b>	150,177	150,177	5.8	7	8	5	7	<b>6.6</b>
<b>Marco Island</b>	19,534	10,454	8.8	4	9	8	4	<b>6.8</b>
<b>Naples</b>	5,001	4,372	9.3	3	4	11	11	<b>7.7</b>
<b>Marco Beach</b>	1,201	107	11.5	11	6	14	3	<b>9.1</b>
<b>Ten Thousand Islands</b>	134,278	91,651	8.5	9	10	10	9	<b>9.3</b>
<b>BCNP</b>	705,549	513,717	10.3	13	15	2	10	<b>10.1</b>
<b>Gulf</b>	142,634	517	11.3	14	11	9	13	<b>11.7</b>
<b>South Naples Beach</b>	422	24	11.3	10	13	15	15	<b>12.9</b>
<b>Cochatchee Beach</b>	1,462	23	13.8	15	12	13	12	<b>13.2</b>
<b>Naples Beach</b>	1,527	1	14.3	12	14	12	14	<b>13.3</b>

**Figure 1**

**WMP Watersheds - FDEP Everglades West Coast Watersheds**

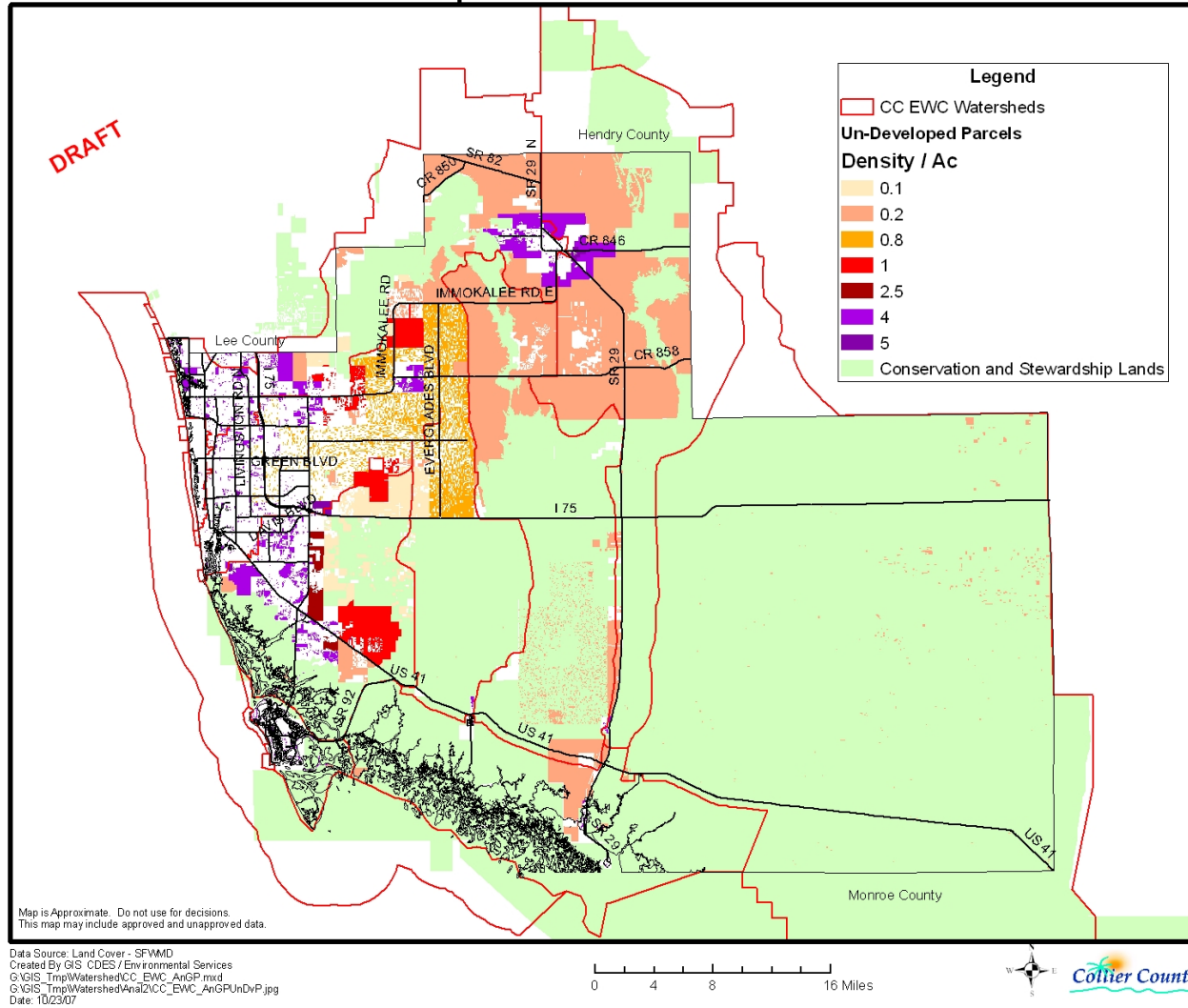


Data Source: Land Cover - SFWMD  
Created By GIS CDES / Environmental Services  
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Date: 10/23/07



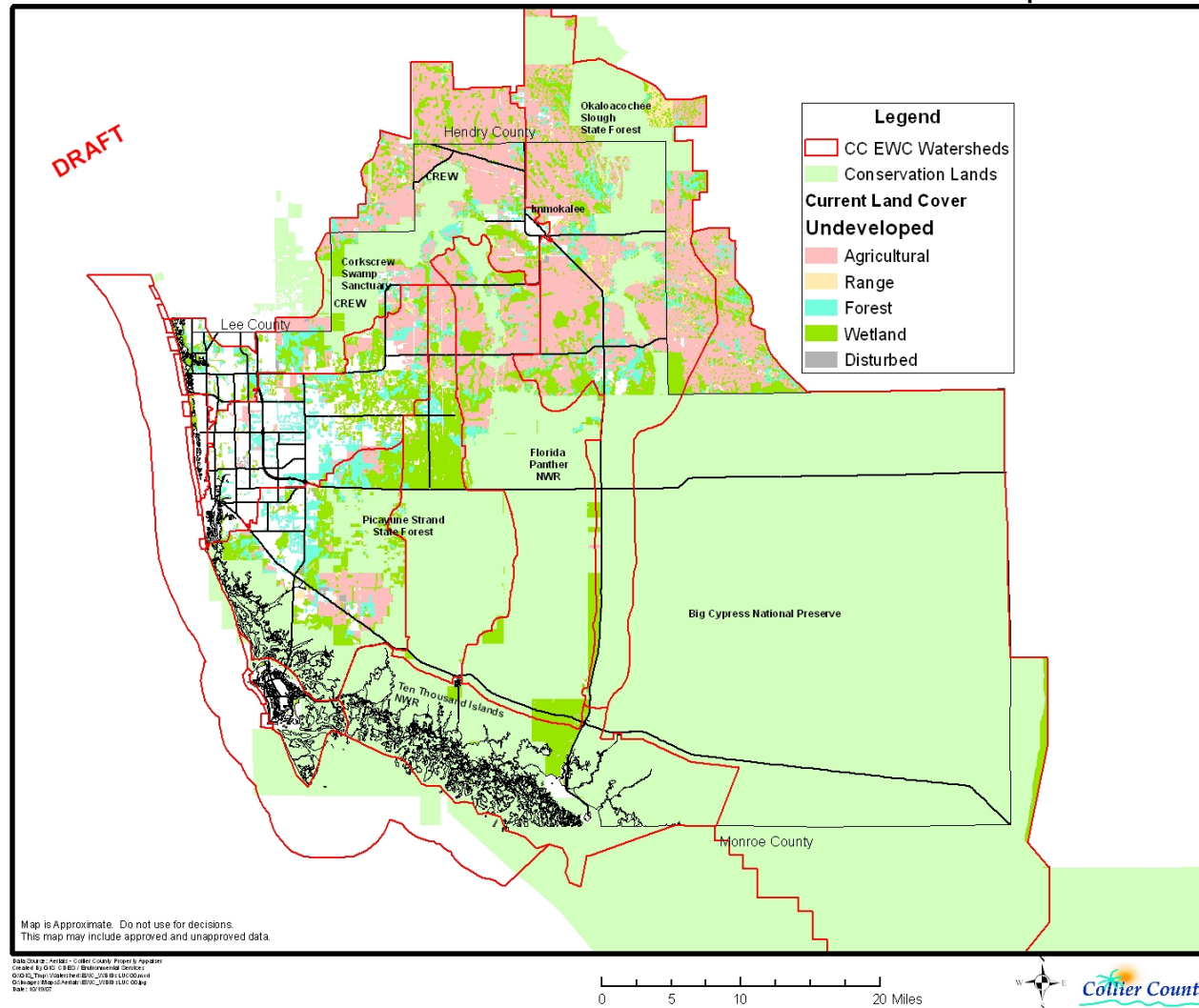
**Figure 2**

**WMP Growth Potential - Undeveloped Parcels**



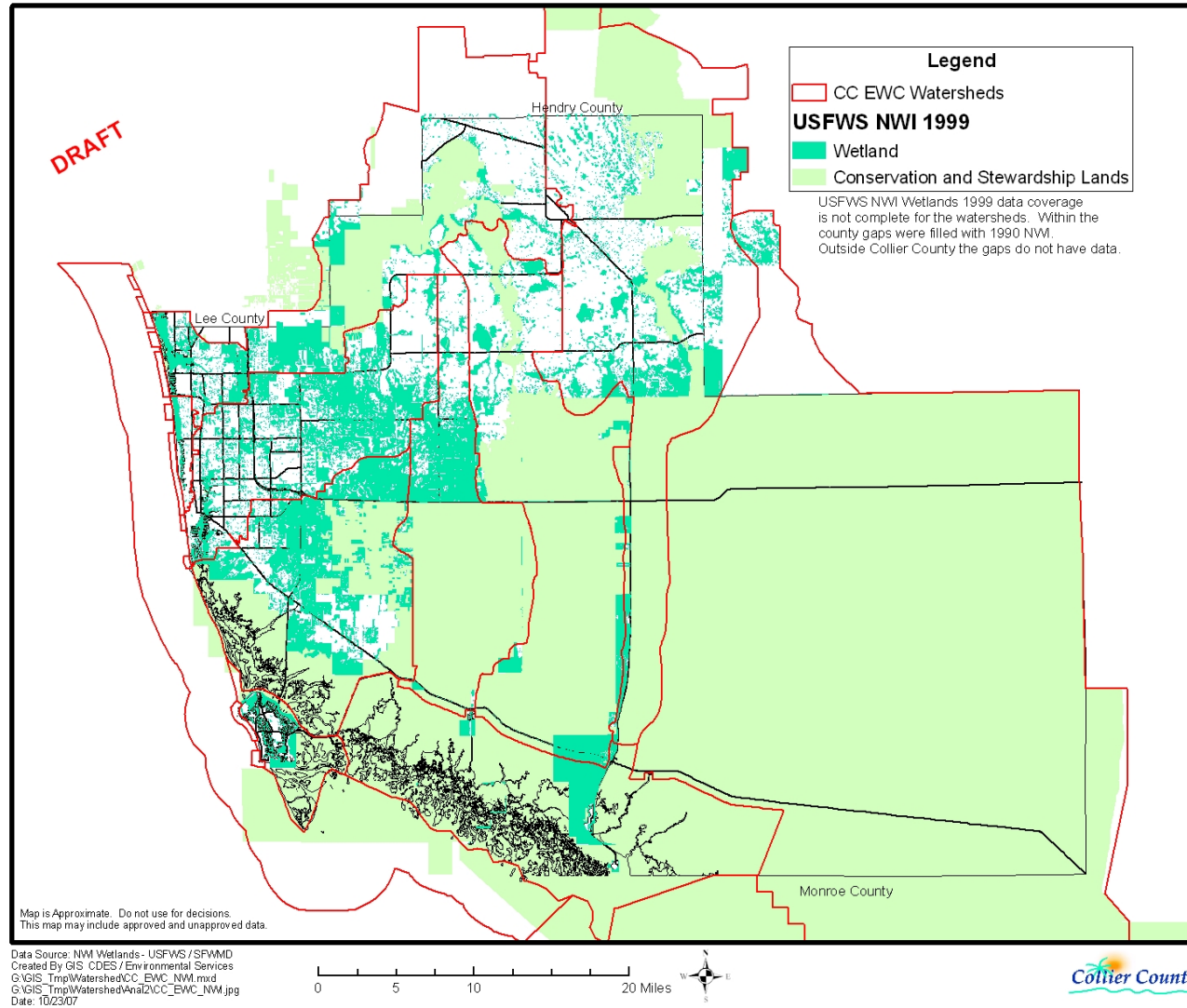
### Figure 3

**WMP Growth Potential - SFWMD LUC 2000 with Conservation and Stewardship Lands**



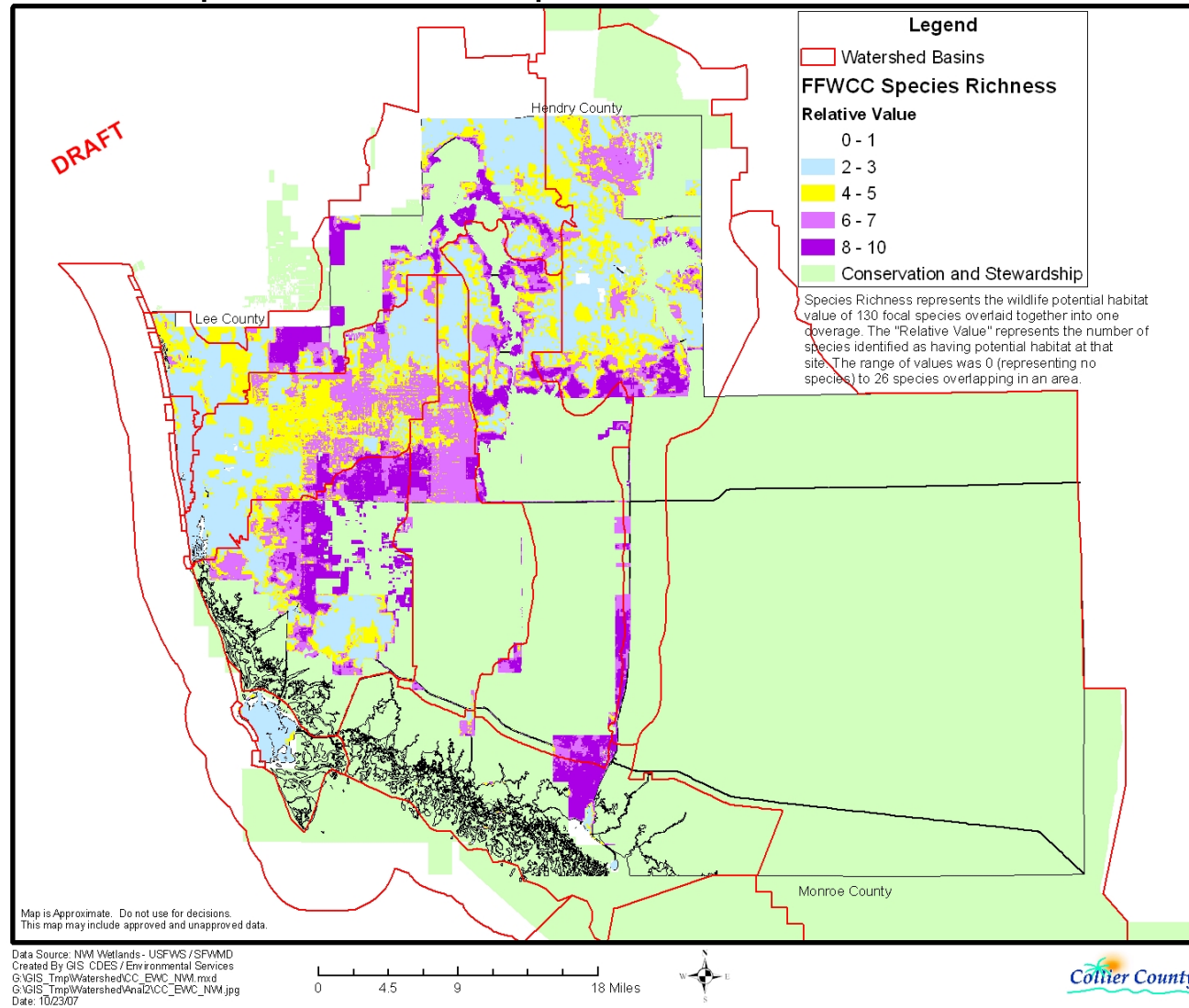
**Figure 4**

**WMP Wetlands - National Wetland Inventory Wetlands**



**Figure 5**

**WMP Listed Species Habitat - FFWCC Species Richness not in Conservation**



**Figure 6**

**WMP Watersheds - Potential Restoration**

