



South Miami-Dade



WATERSHED STUDY AND PLAN

Planning for a sustainable, healthy environment and economy



Draft Preferred Scenario Assessment May 25, 2006

***Michael Davis, Vice President
Keith and Schnars, P.A.***

Presentation Overview

- **Draft Preferred Scenario**
- **Assessment Results**
 - **Water Resources**
 - **Natural Communities**
 - **Land Use\Community Character**
 - **Economics**
 - **Infrastructure**



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Parameter Assessments

Stormwater Discharge Quality

Surface Water Flows/Distribution

Tidal Wetlands

Remnant Natural Forests

Development Densities

Housing to Transit and Employment

Economic Base

Cost of Housing

Transportation

Potable Water

Groundwater Supply

Flood Protection

Freshwater Wetlands

Air Quality

Rural Land

Parks

Sustainable Agriculture

Mix of Wages

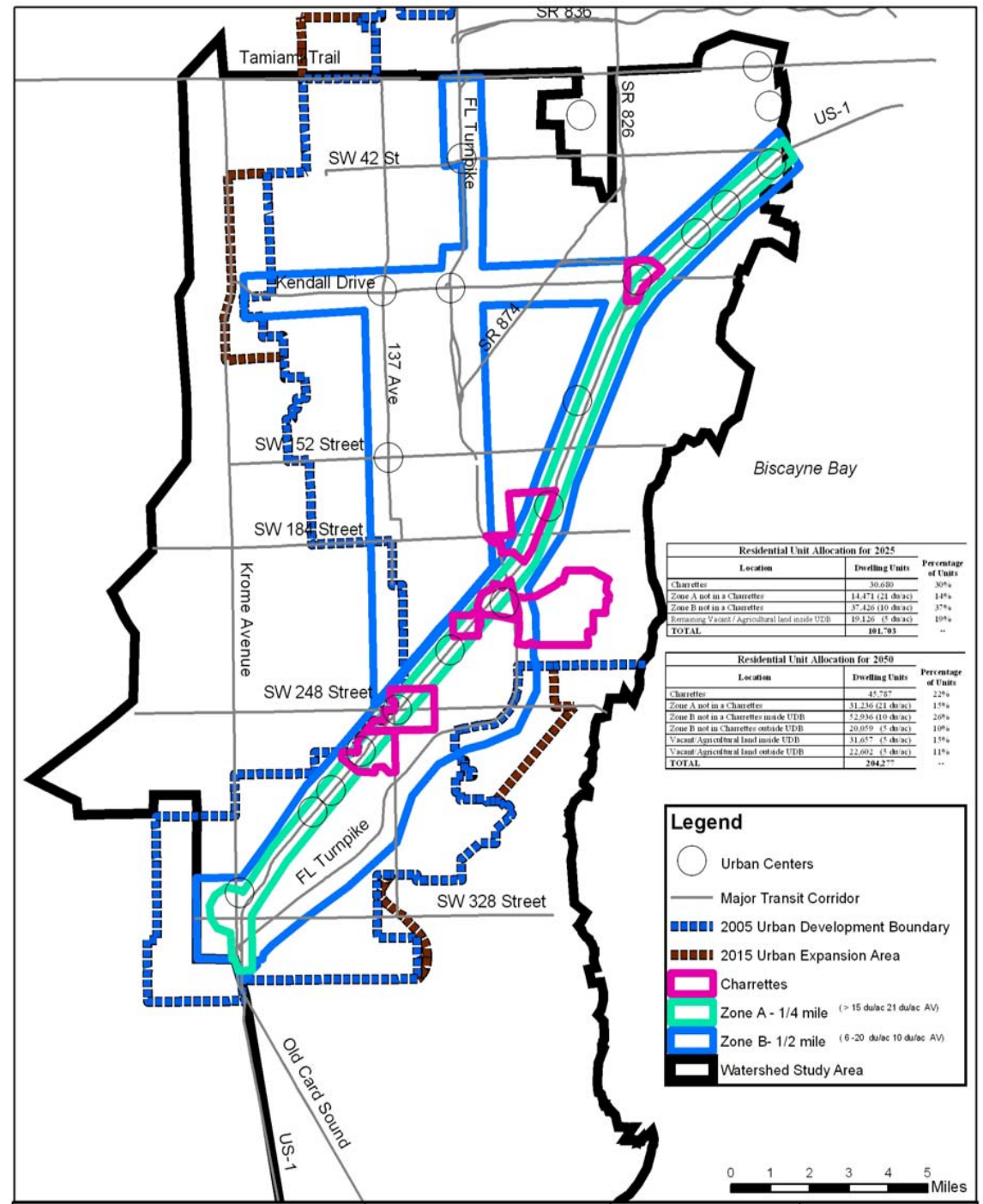
Schools

Wastewater

Draft Preferred Scenario Design Guide

**Zone A – ¼ mile (US1)
> 15du/ac
21 du/ac average**

**Zone B – ½ mile (US1)
6 – 20du/ac
10 du/ac average**



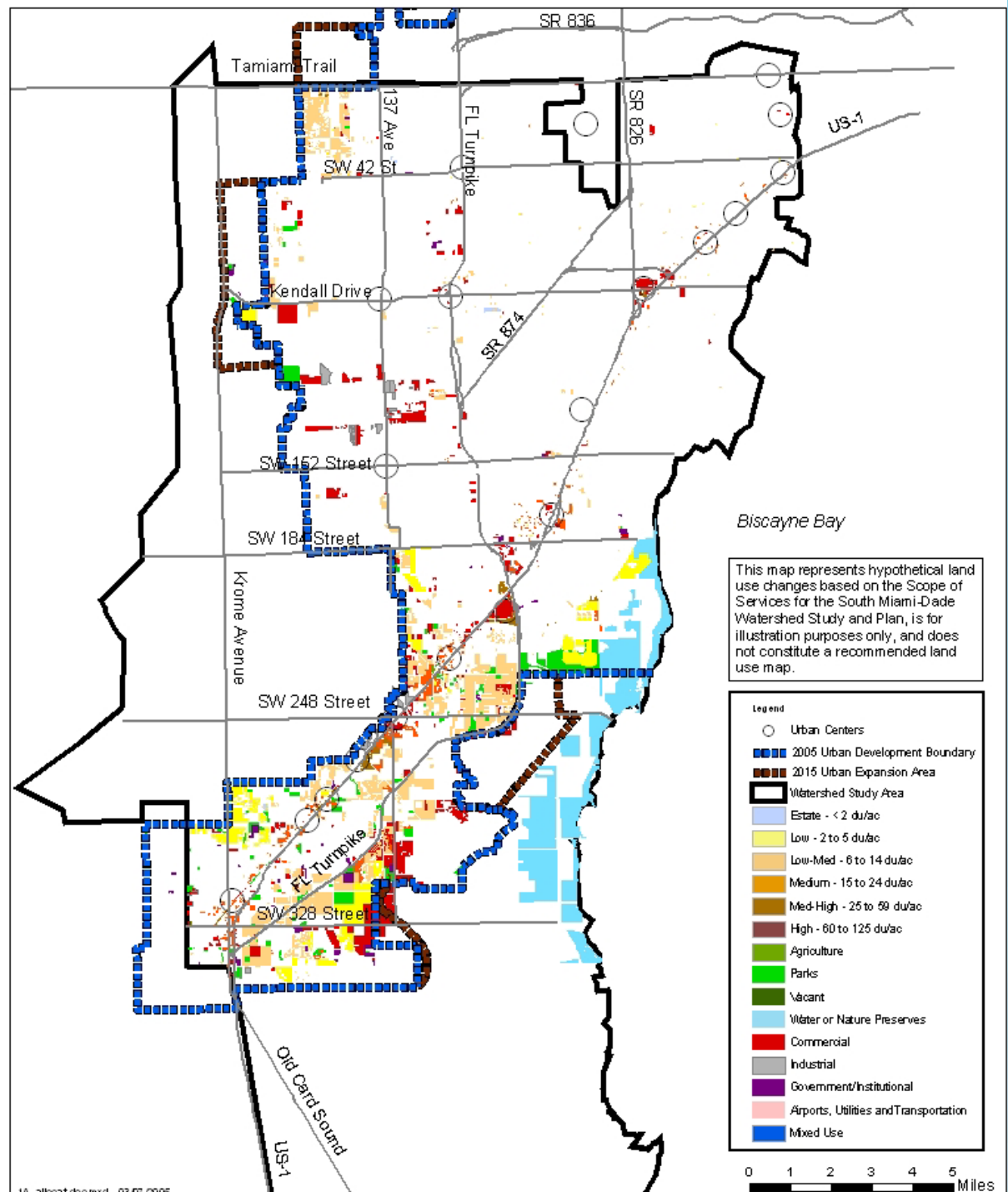
Unit Allocation 2025

Residential Unit Allocation for 2025		
Location	Dwelling Units	Percentage of Units
Charrettes	30,680	30%
Zone A not in a Charrettes	14,471 (21 du/ac)	14%
Zone B not in a Charrettes	37,426 (10 du/ac)	37%
Remaining Vacant / Agricultural land inside UDB	19,126 (5 du/ac)	19%
TOTAL	101,703	--

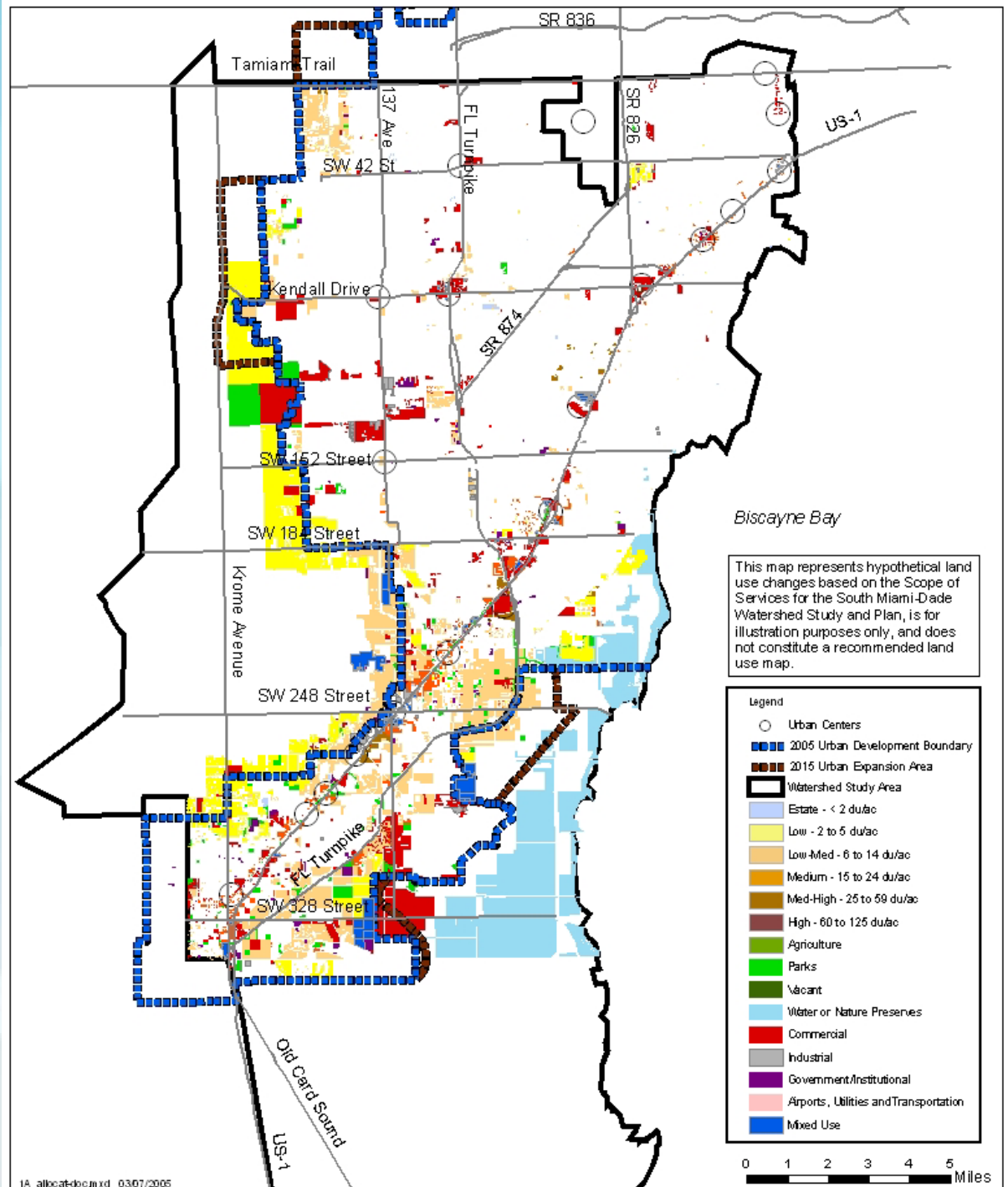
Unit Allocation 2050

Residential Unit Allocation for 2050		
Location	Dwelling Units	Percentage of Units
Charrettes	45,787	22%
Zone A not in a Charrettes	31,236 (21 du/ac)	15%
Zone B not in a Charrettes inside UDB	52,936 (10 du/ac)	26%
Zone B not in Charrettes outside UDB	20,059 (5 du/ac)	10%
Vacant/Agricultural land inside UDB	31,657 (5 du/ac)	15%
Vacant/Agricultural land outside UDB	22,602 (5 du/ac)	11%
TOTAL	204,277	--

Draft Preferred Scenario Assessment Map 2025



Draft Preferred Scenario Assessment Map 2050





***Sub-task 4.3:
Water Resources
Assessments***

***Michael Davis, Vice President
Keith and Schnars, P.A.***

Watershed Basins Modeled with XP-SWMM Model

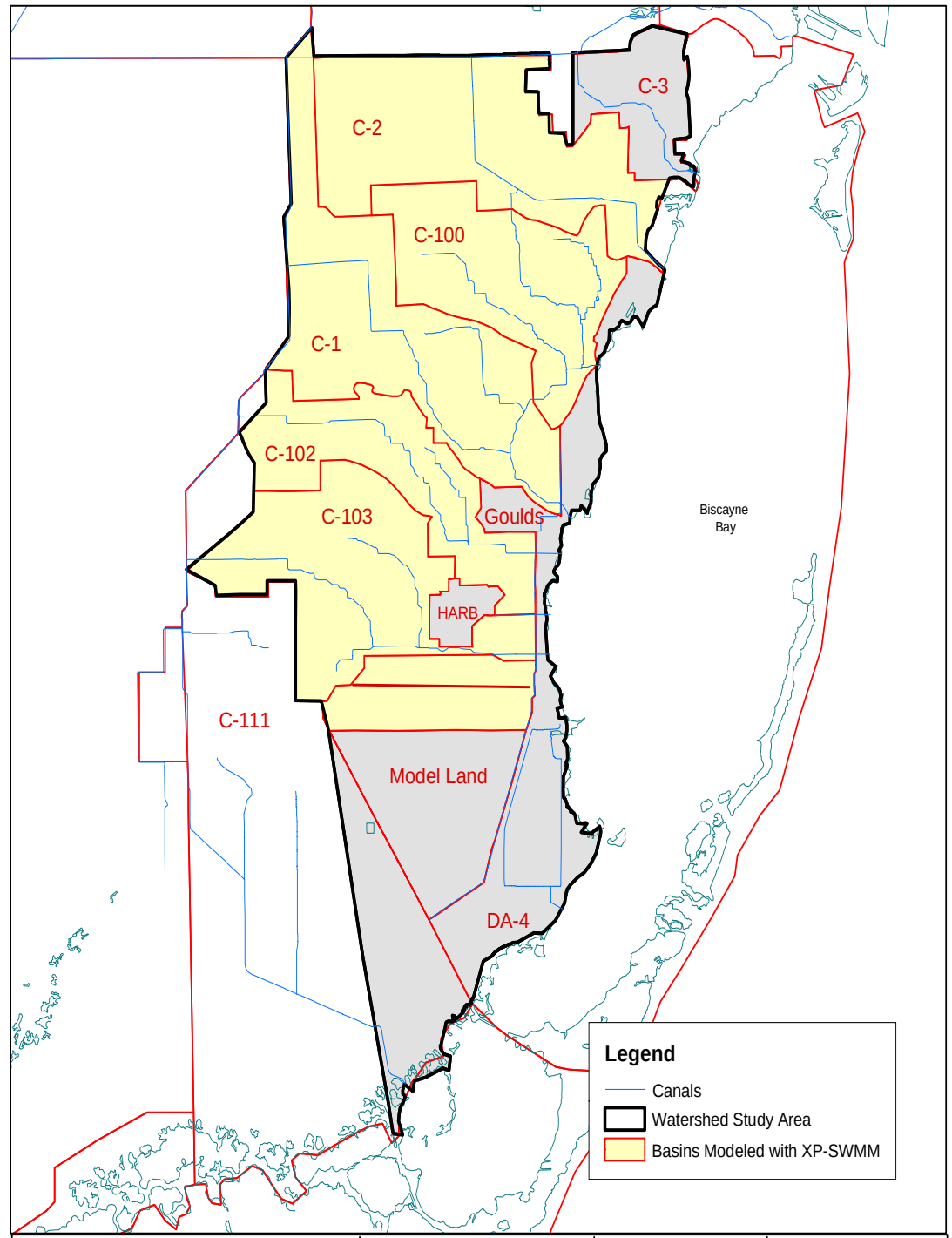
C-1

C-2

C-100

C-102

C-103



Water Resources

Water Quality for all Basins (C-1, C-2, C-100, C-102, and C-103)

Water Quality Parameter Id	Baseline Scenario	Scenario 1 B - Year 2050		Scenario 2 B - Year 2050		Scenario 3 B - Year 2050		Draft Preferred - Year 2050	
	Pollutant Load (lbs)	Pollutant Load (lbs)	% Difference Scenario 1/ Baseline	Pollutant Load (lbs)	% Difference Scenario 2/ Baseline	Pollutant Load (lbs)	% Difference Scenario 3/ Baseline	Pollutant Load (lbs)	% Difference DPS / Baseline
BOD5	203,034	358,674	77	264,712	30	248,095	22	289,272	42
COD	1,087,243	1,941,088	79	1,446,700	33	1,348,420	24	1,579,566	45
TSS	895,850	1,420,126	59	1,134,517	27	1,072,811	20	1,214,756	36
TDS	7,868,403	17,576,643	123	12,344,446	57	11,528,019	47	11,159,219	42
TN	43,045	66,636	55	55,357	29	52,778	23	54,195	26
Nox-N	12,857	31,925	148	17,661	37	18,666	45	18,584	45
NH3-N	2,458	4,516	84	3,524	43	3,259	33	3,736	52
TKN	26,488	46,214	74	35,208	33	33,056	25	35,752	35
TP	6,811	9,880	45	8,423	24	8,115	19	8,389	23
DP	4,249	7,319	72	5,881	38	5,573	31	5,494	29
Cd	58	138	138	95	63	86	48	100	72
Copper	764	1,076	41	992	30	985	29	916	20
Lead	2,531	5,896	133	3,970	57	3,606	42	4,347	72
Zn	1,810	3,396	88	2,535	40	2,376	31	2,714	50

Water Resources

Water Quality for Basin C-2

Water Quality Parameter Id	Baseline Scenario	Scenario 1 B - Year 2050		Scenario 2 B - Year 2050		Scenario 3 B - Year 2050		Draft Preferred - Year 2050	
	Pollutant Load (lbs)	Pollutant Load (lbs)	% Difference Scenario 1/ Baseline	Pollutant Load (lbs)	% Difference Scenario 2/ Baseline	Pollutant Load (lbs)	% Difference Scenario 3/ Baseline	Pollutant Load (lbs)	% Difference DPS/ Baseline
BOD5	67,670	95,615	41	71,583	6	65,637	-3	59,550	-12
COD	364,573	532,346	46	382,881	5	355,091	-3	323,257	-11
TSS	299,960	429,054	43	314,042	5	290,692	-3	264,839	-12
TDS	2,931,476	4,734,863	62	3,070,469	5	3,048,328	4	2,920,840	0
TN	13,774	19,955	45	14,432	5	13,384	-3	12,215	-11
NOx-N	3,952	5,479	39	3,992	1	3,797	-4	3,544	-10
NH3-N	649	926	43	658	1	644	-1	600	-8
TKN	8,526	12,536	47	8,928	5	8,276	-3	7,531	-12
TP	2,234	3,153	41	2,371	6	2,160	-3	1,955	-12
DP	1,288	2,004	56	1,355	5	1,280	-1	1,178	-9
Cd	18	33	86	19	8	18	4	17	-5
Copper	292	359	23	294	1	288	-1	278	-5
Lead	816	1,475	81	872	7	847	4	783	-4
Zn	622	929	49	650	4	622	0	580	-7

Water Resources

Water Quality for Basin C-103

Water Quality Parameter Id	Baseline Scenario	Scenario 1 B - Year 2050		Scenario 2 B - Year 2050		Scenario 3 B - Year 2050		Draft Preferred - Year 2050	
	Pollutant Load (lbs)	Pollutant Load (lbs)	% Difference Scenario 1/ Baseline	Pollutant Load (lbs)	% Difference Scenario 2/ Baseline	Pollutant Load (lbs)	% Difference Scenario 3/ Baseline	Pollutant Load (lbs)	% Difference DPS/ Baseline
BOD5	13,893	83,756	503	46,106	232	40,558	192	66,477	378
COD	70,986	427,958	503	251,133	254	213,417	201	370,615	422
TSS	62,979	258,147	310	195,468	210	176,131	180	215,443	242
TDS	778,252	4,836,836	521	3,499,607	350	3,131,775	302	3,458,550	344
TN	2,726	11,249	313	9,013	231	8,217	201	9,602	252
Nox-N	1,207	15,342	1,171	4,107	240	5,647	368	6,132	408
NH3-N	228	1,142	402	830	265	701	208	1,152	406
TKN	1,672	9,763	484	6,027	260	5,294	217	8,034	380
TP	419	1,492	256	1,204	188	1,120	168	1,287	207
DP	305	1,405	360	1,159	280	1,029	237	1,156	279
Cd	4	33	789	19	424	16	319	29	696
Copper	96	226	135	280	191	285	196	207	115
Lead	115	981	753	608	429	491	327	937	715
Zn	158	829	425	576	265	518	228	728	361

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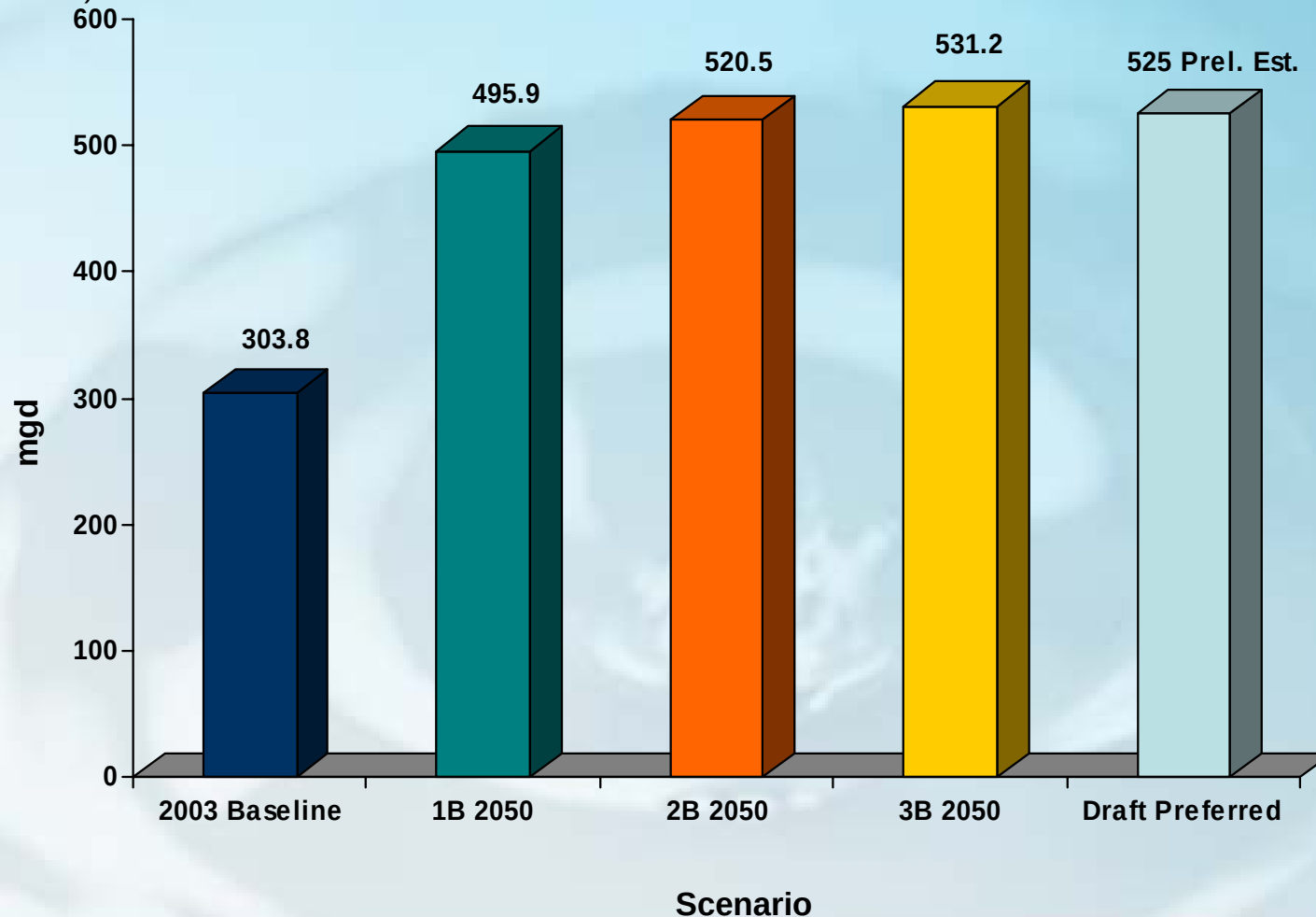
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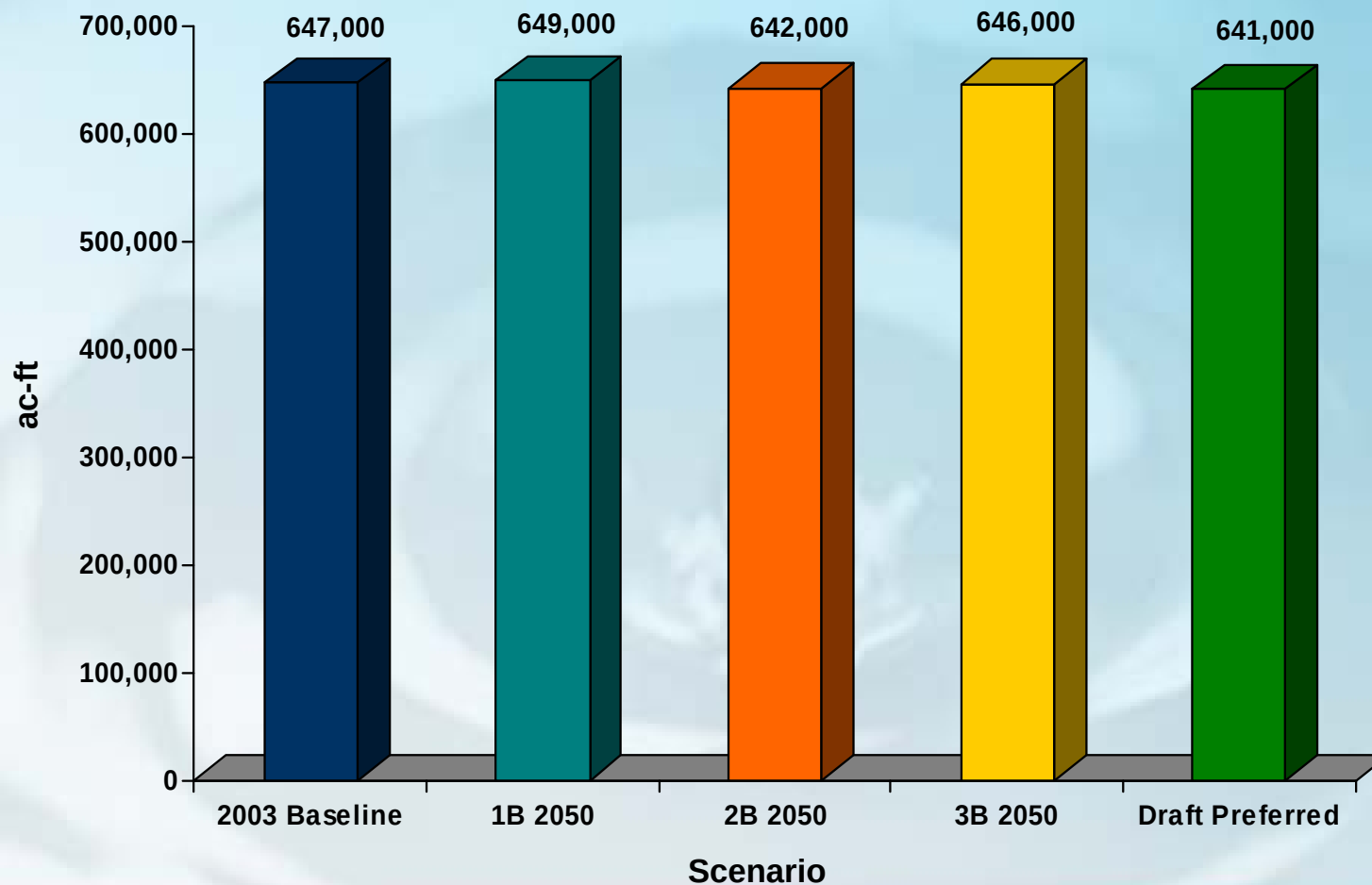
Water Resources

Groundwater Supply = one in ten drought factor demands (Urban PS + Non-urban)



Water Resources

Surface Water – Flows / Distribution to the Bay



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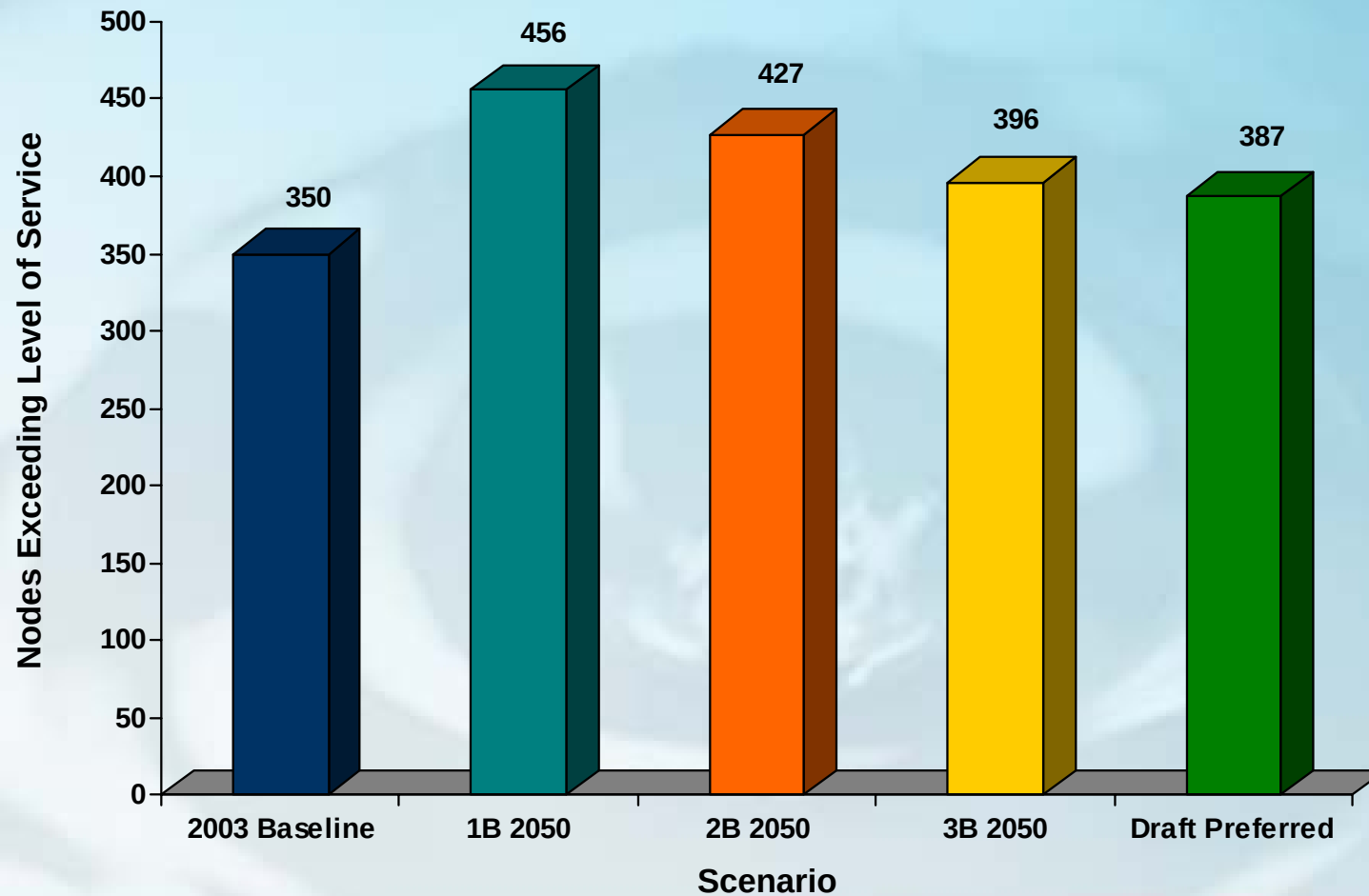
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Water Resources

Flooding





***Sub-task 4.3:
Natural Communities***

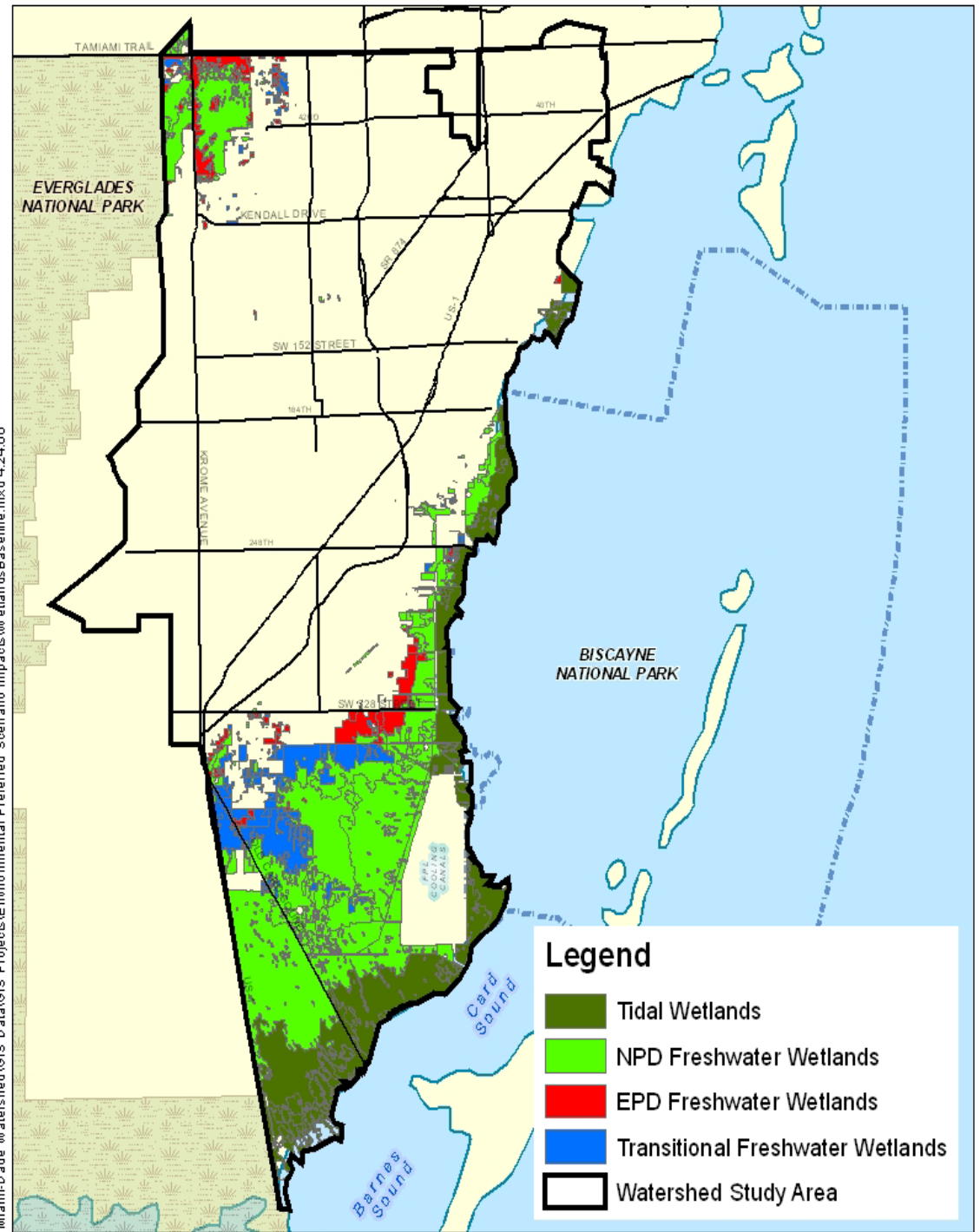
John Abbott, P.G.

***Director of Environmental Sciences and Water Resources
Planning***

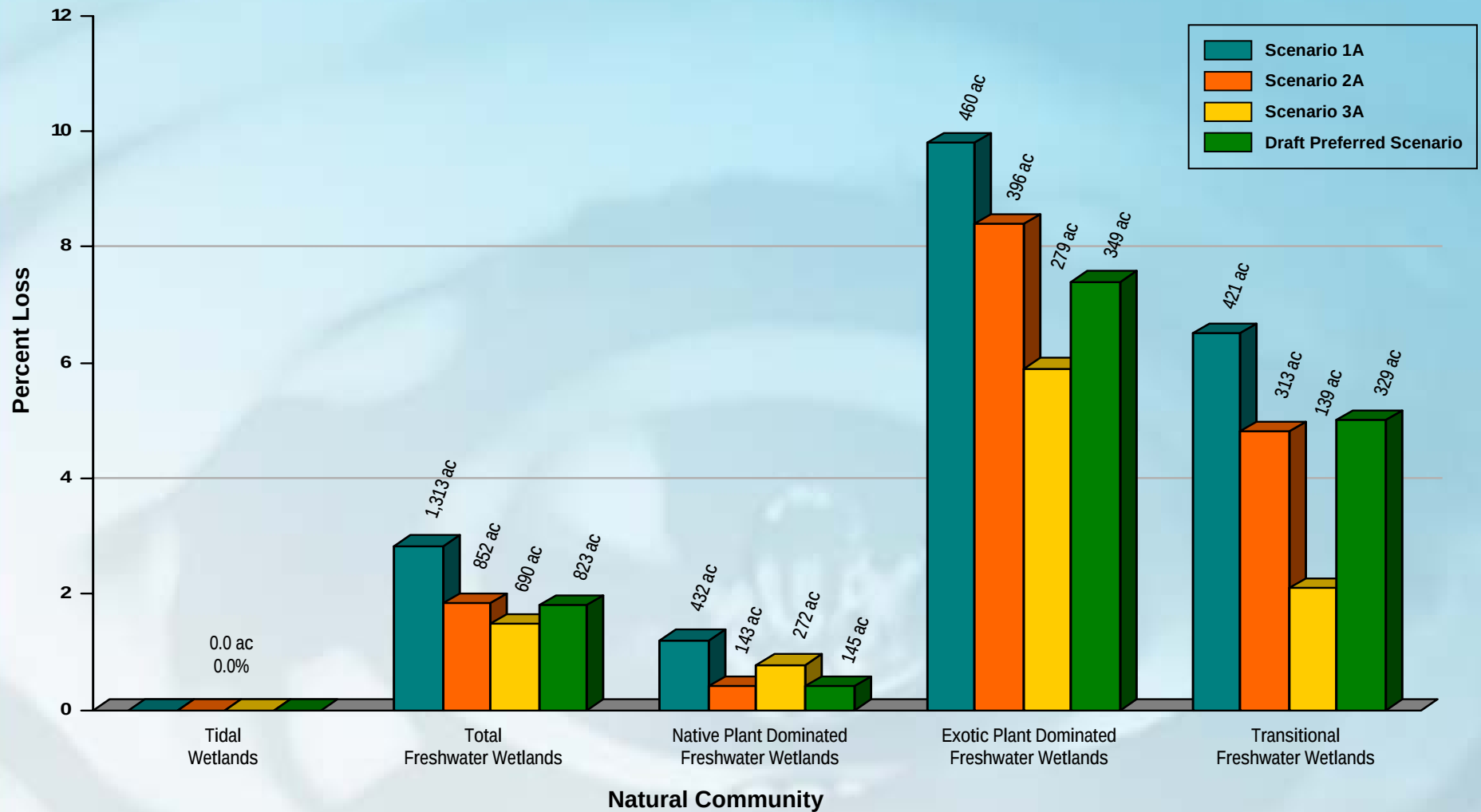
Keith and Schnars, P.A.

2005 Baseline Wetlands

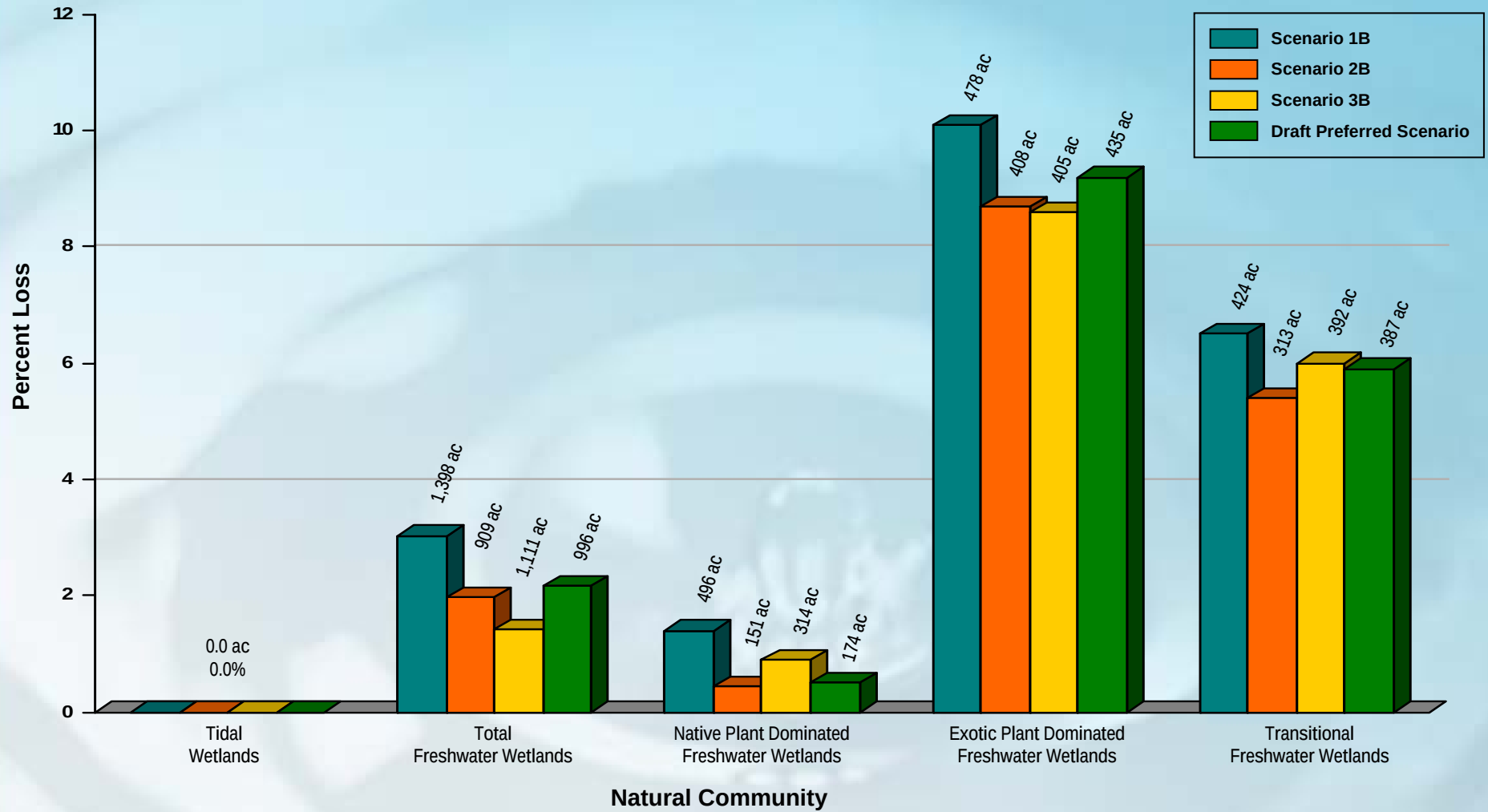
h Miami-Dade Watershed\GIS Data\GIS Project\SE\Environmental Preferred Scenario Impacts\WetlandsBaseline.mxd 4.24.06



Wetland Losses - Year 2025

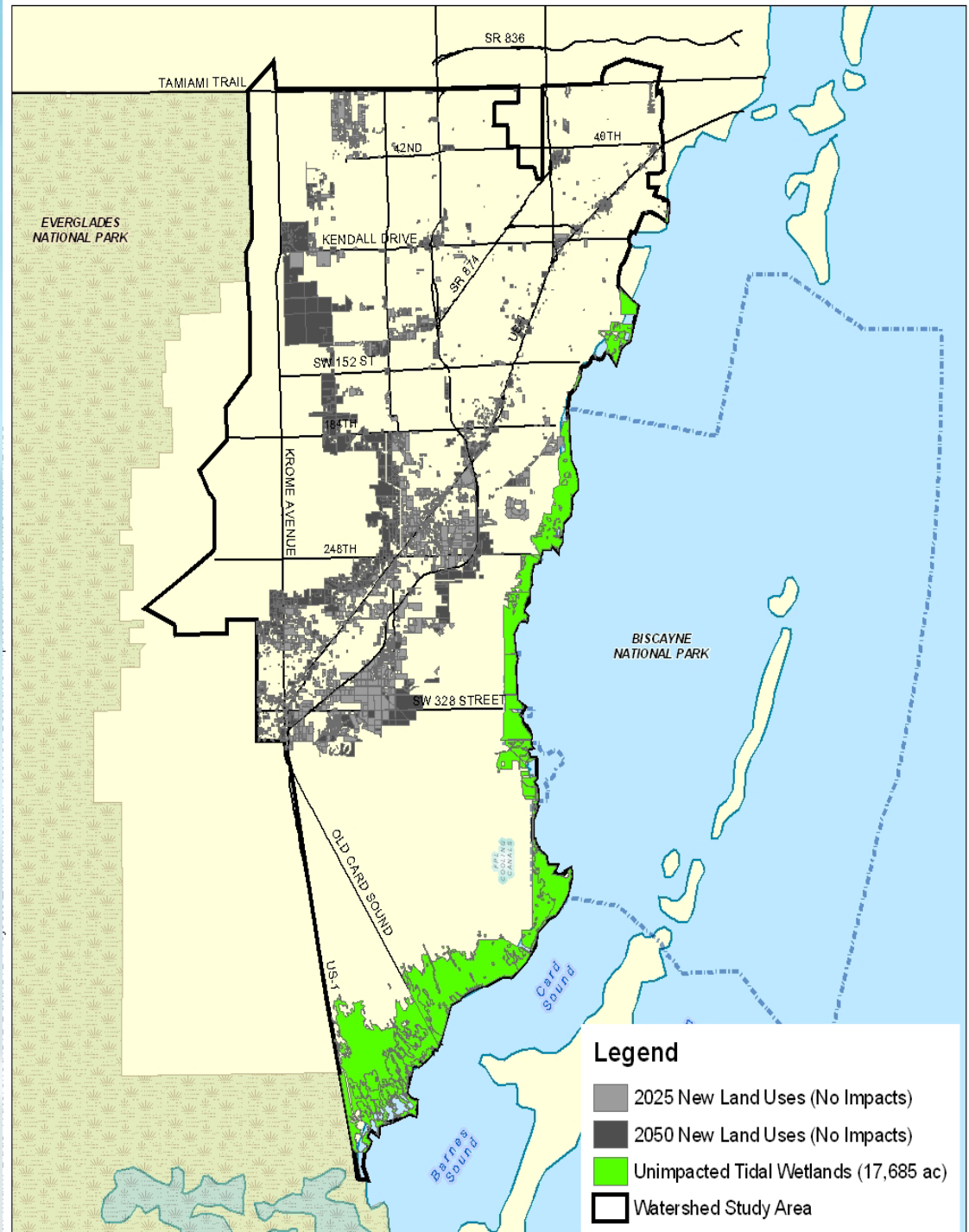


Wetland Losses - Year 2050



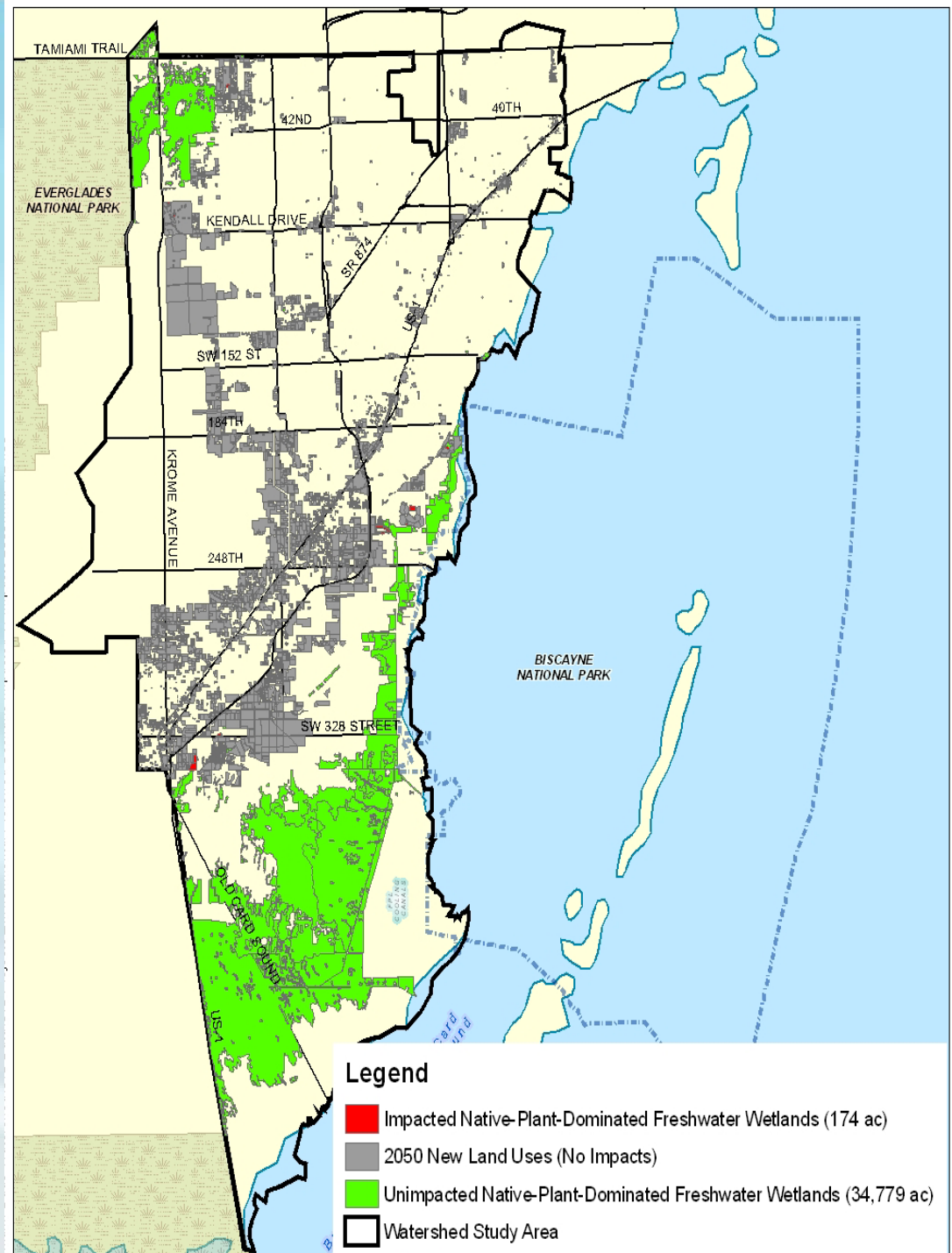
Draft Preferred Scenario Impacts to Wetlands – Year 2050

Tidal Wetlands



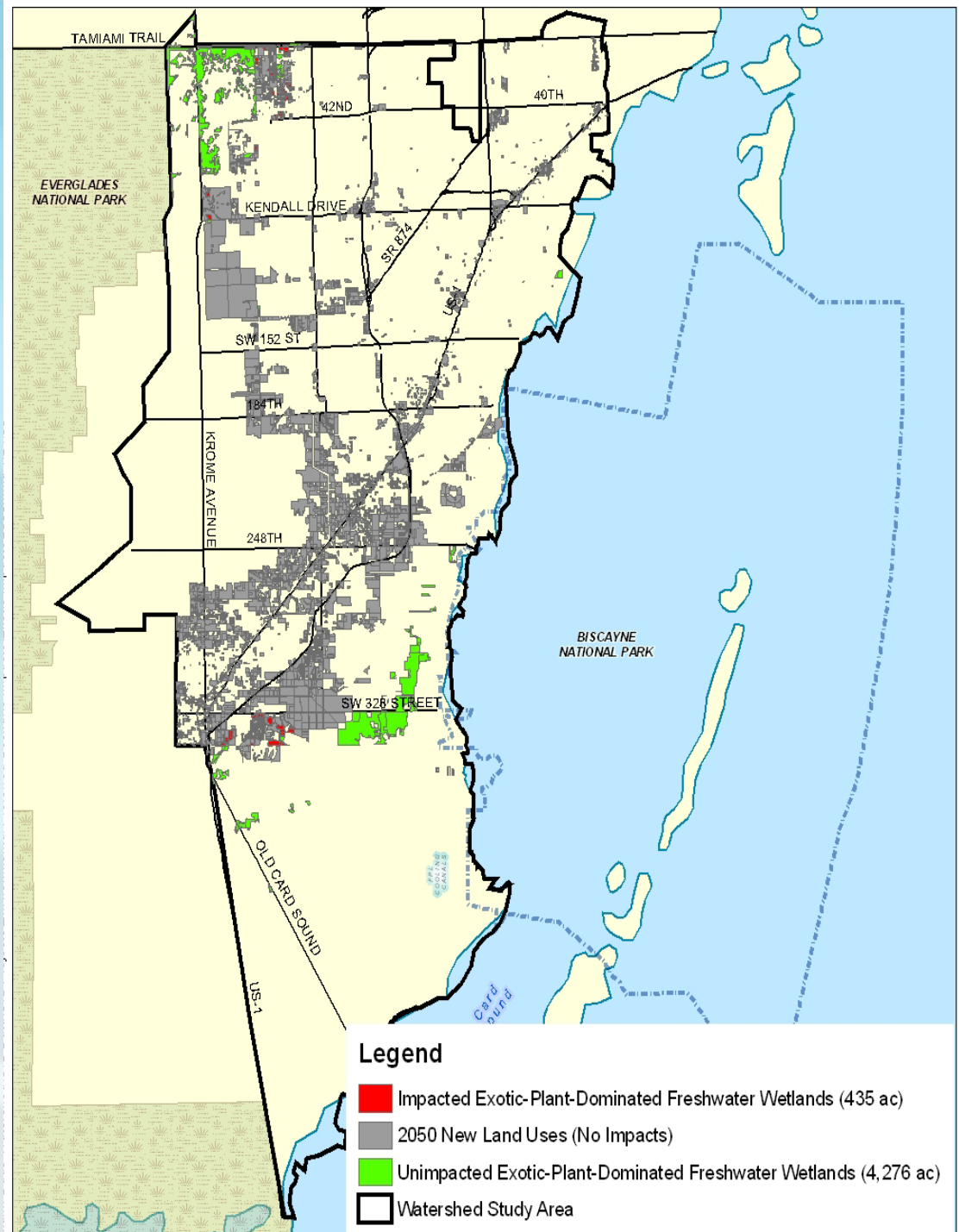
Draft Preferred Scenario Impacts to Wetlands – Year 2050

Native-Plant- Dominated Freshwater Wetlands



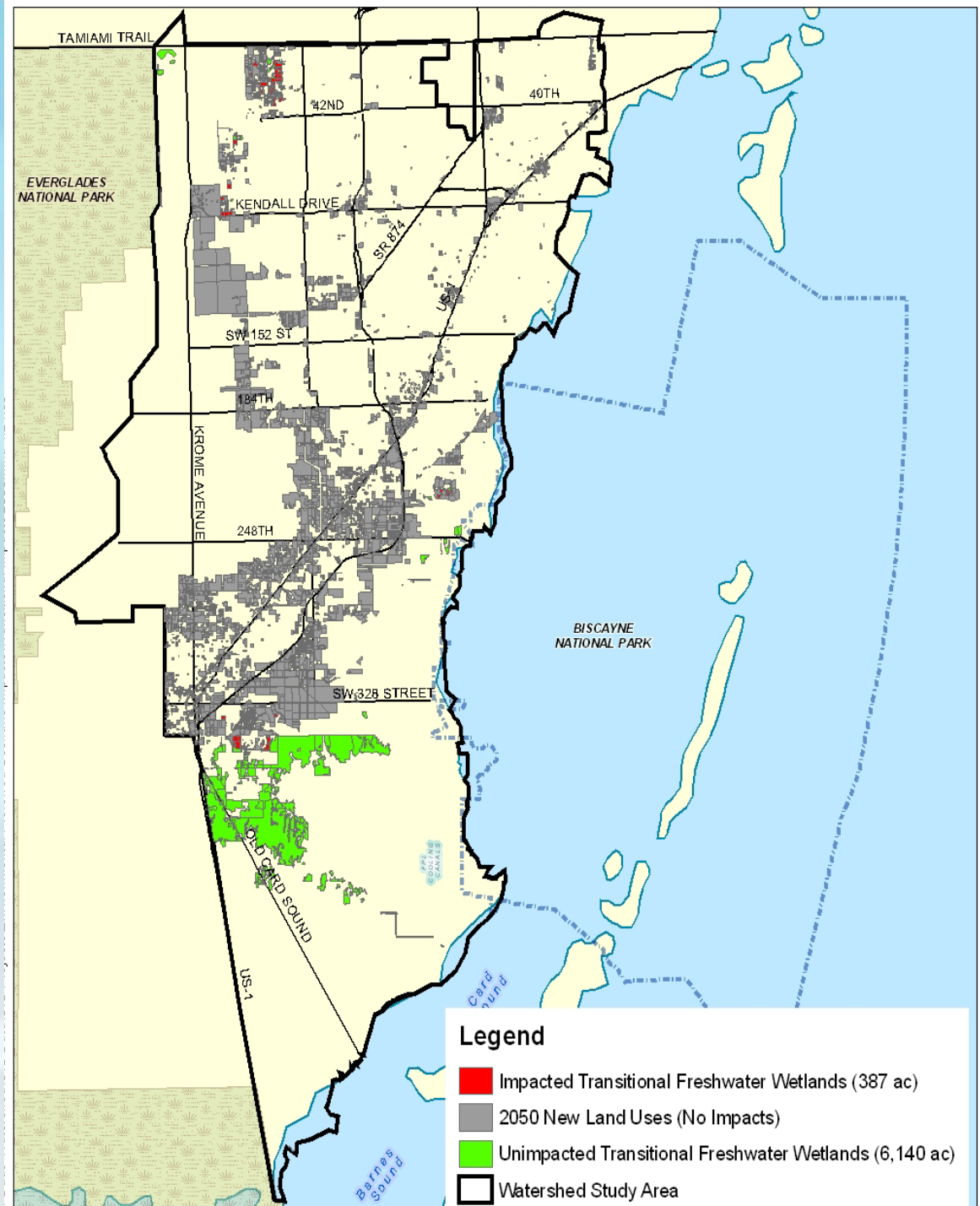
Draft Preferred Scenario Impacts to Wetlands – Year 2050

Exotic-Plant- Dominated Freshwater Wetlands



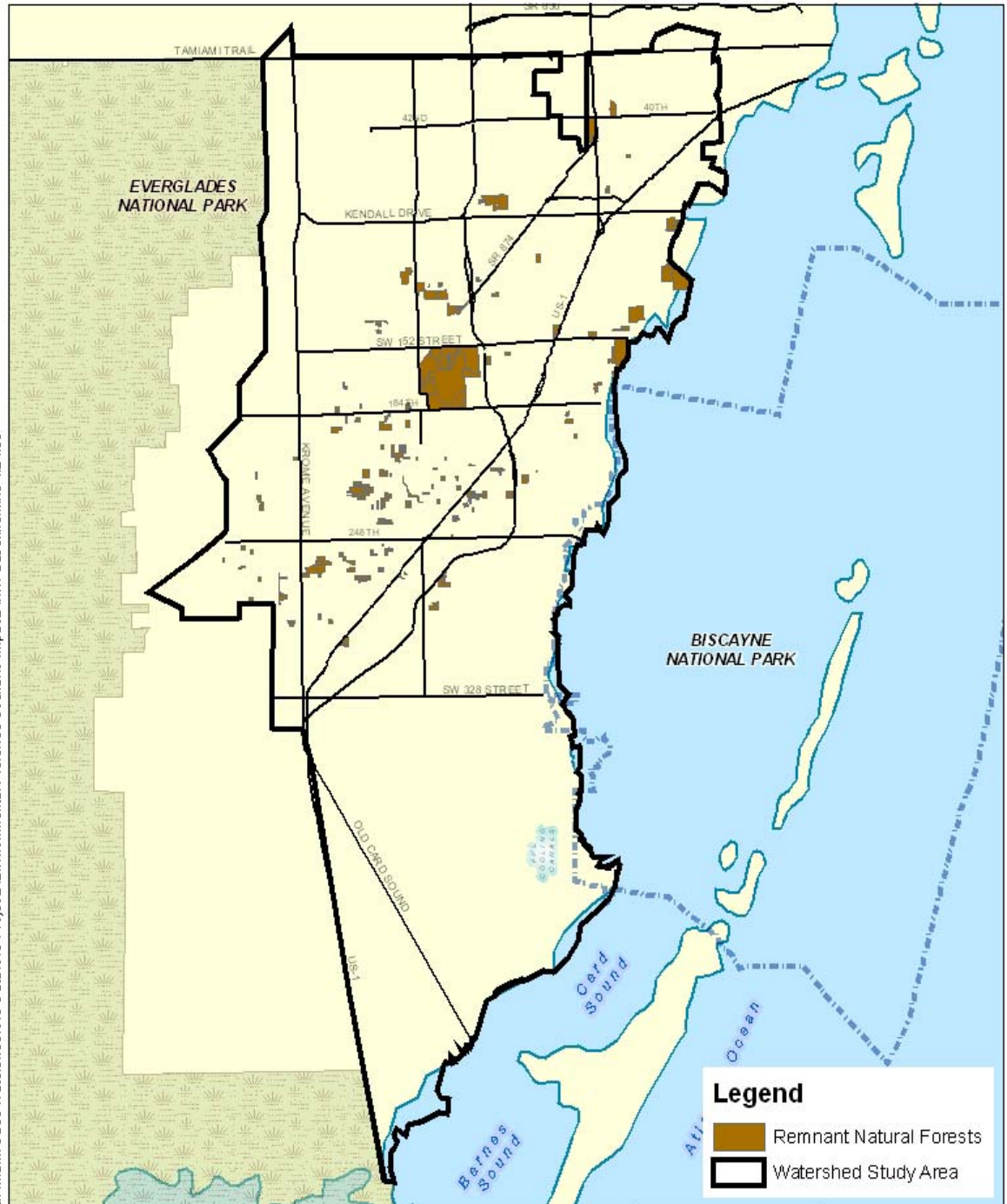
Draft Preferred Scenario Impacts to Wetlands – Year 2050

Transitional Freshwater Wetlands

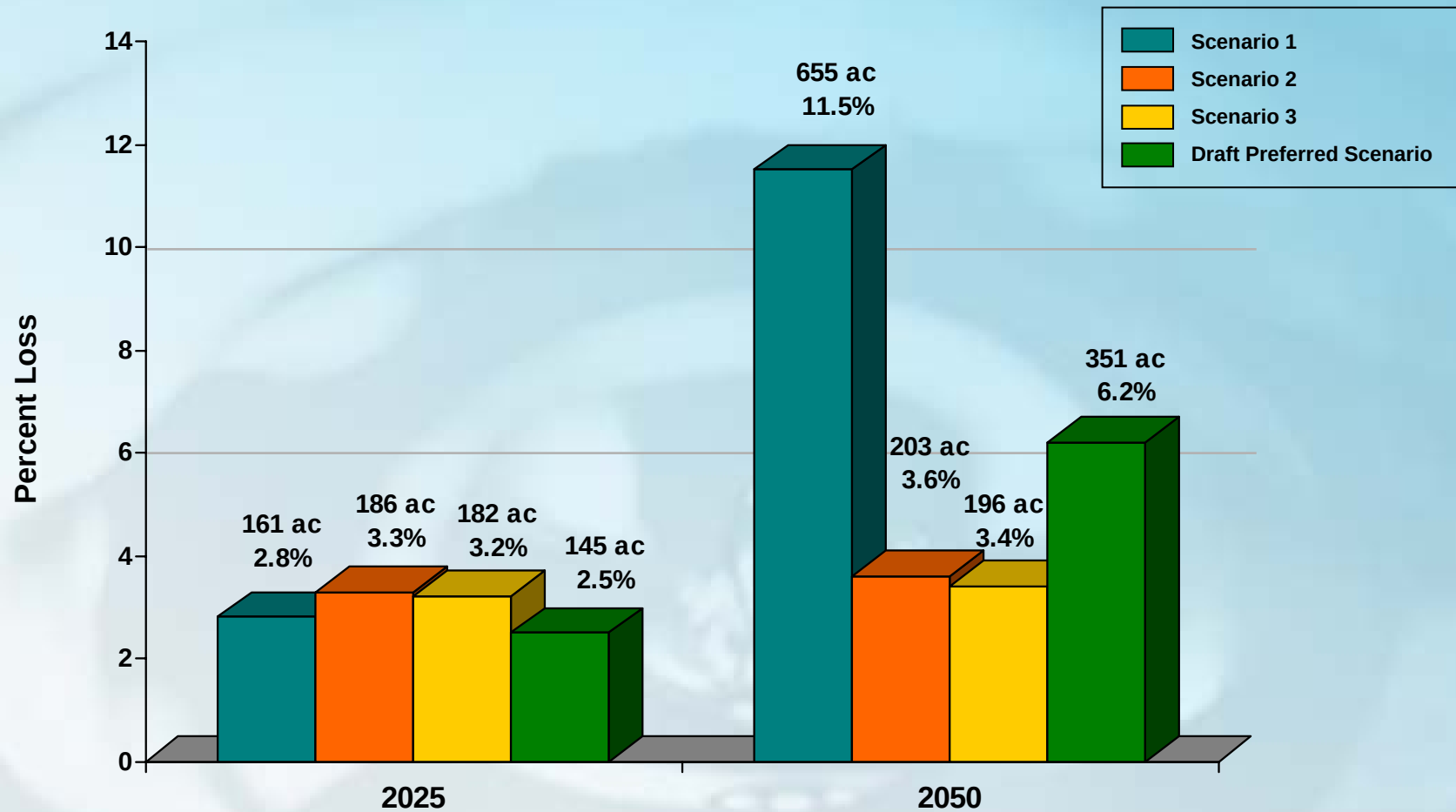


2005 Baseline Remnant Natural Forests

4th Miami-Dade Watershed GIS Data\GIS Projects\Environmental\Preferred Scenario Impacts\RNFBaseline.mxd 4/24/08

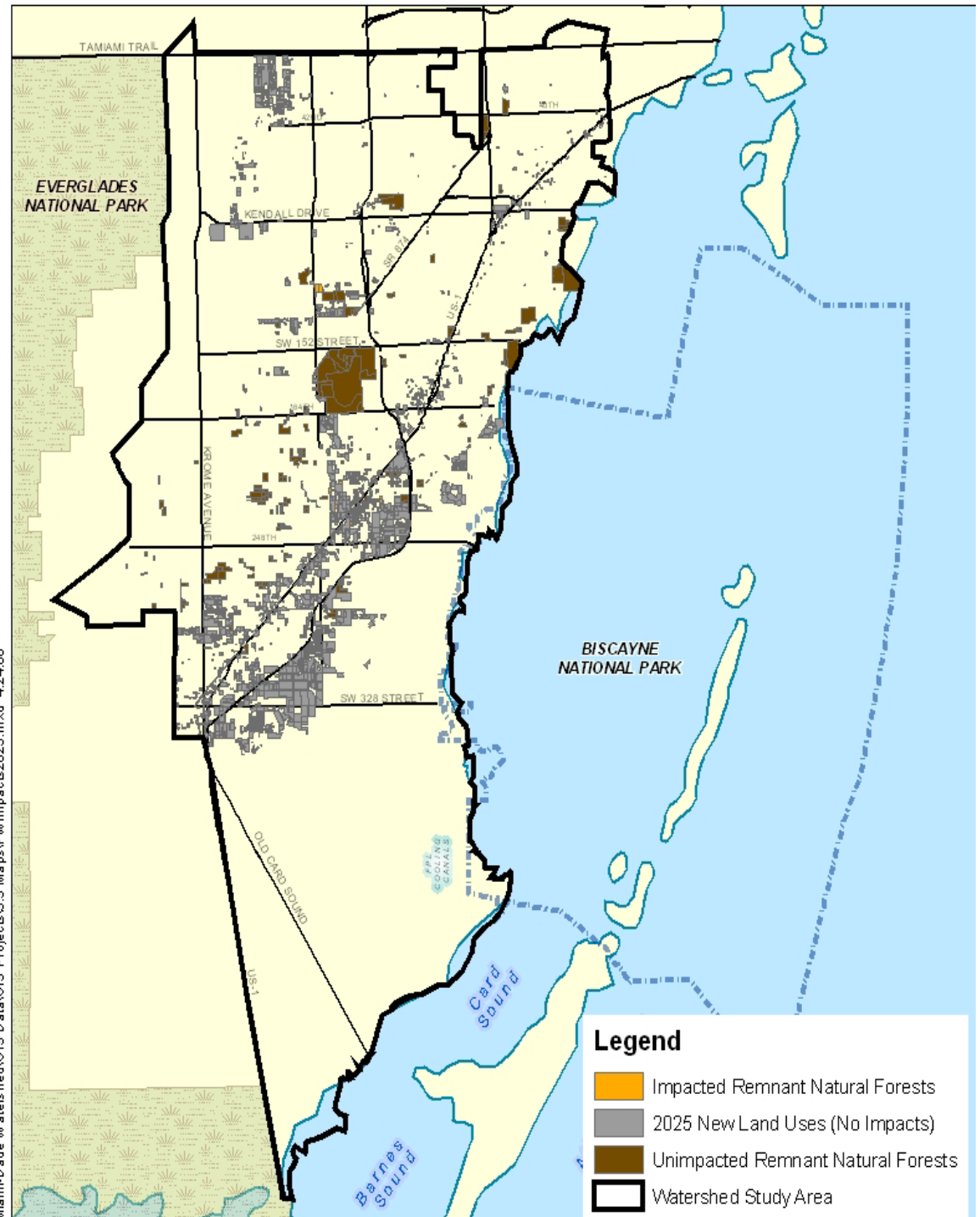


Remnant Natural Forest Losses – Years 2025 and 2050

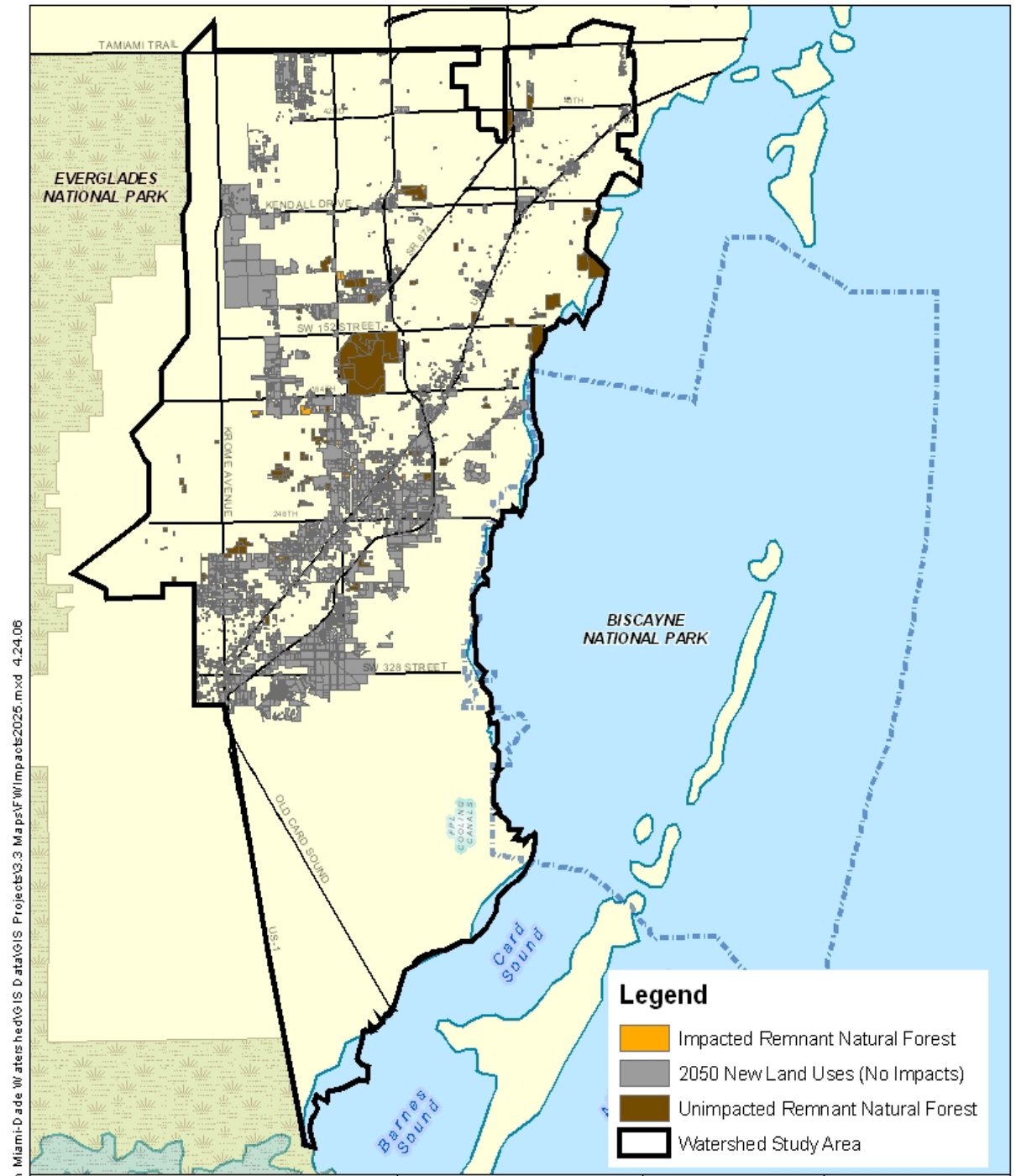


Draft Preferred Scenario Impacts to Remnant Natural Forests – Year 2025

Miami-Dade WatershedGIS Data\GIS Projects\3.3 Maps\FWImpacts2025.mxd 4.24.06



***Draft Preferred
Scenario Impacts to
Remnant Natural
Forests - Year 2050***





***Sub-task 4.3:
Land Use/Community Character***

***Michael Davis, Vice President
Keith and Schnars, P.A.***

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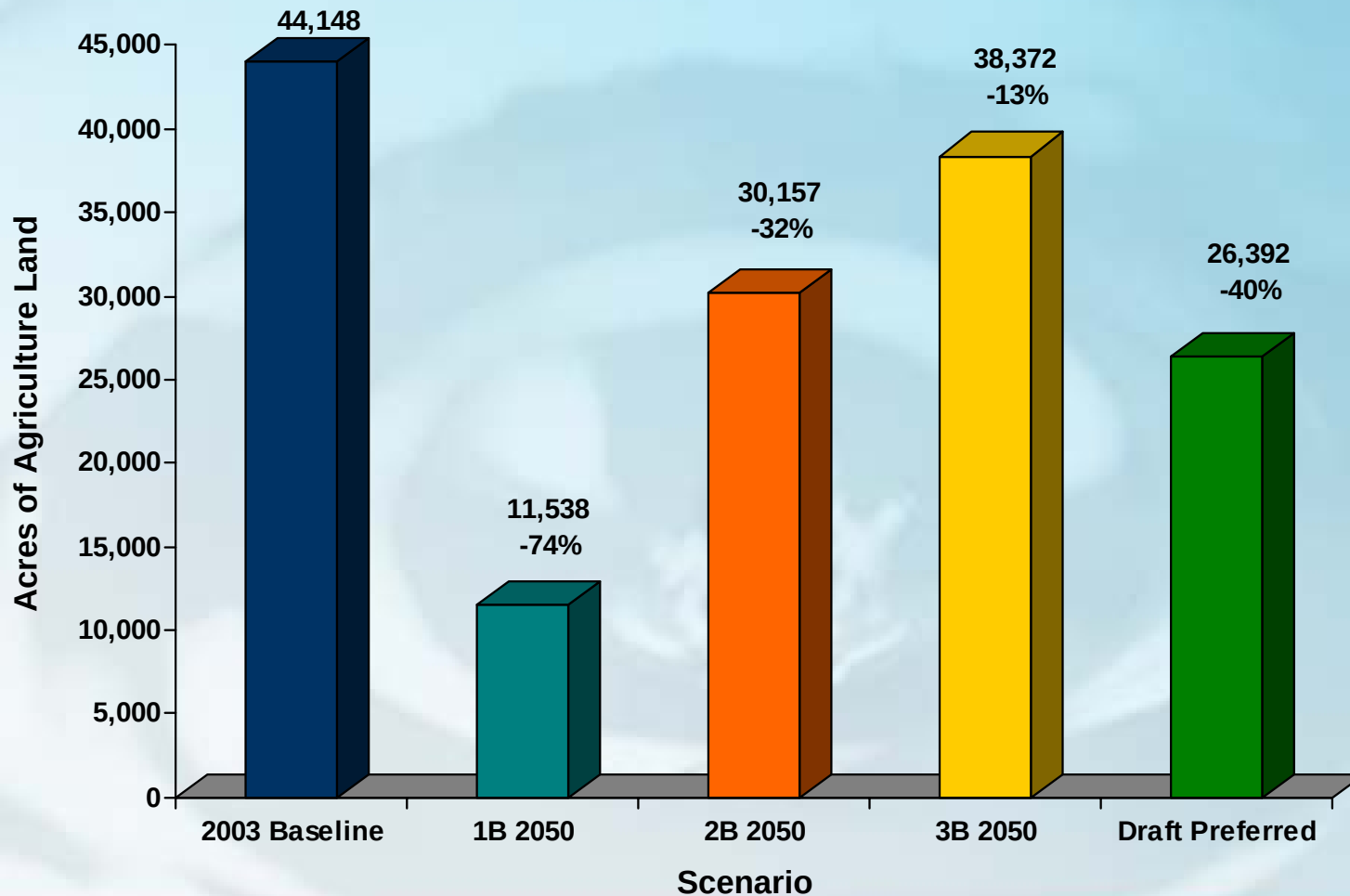
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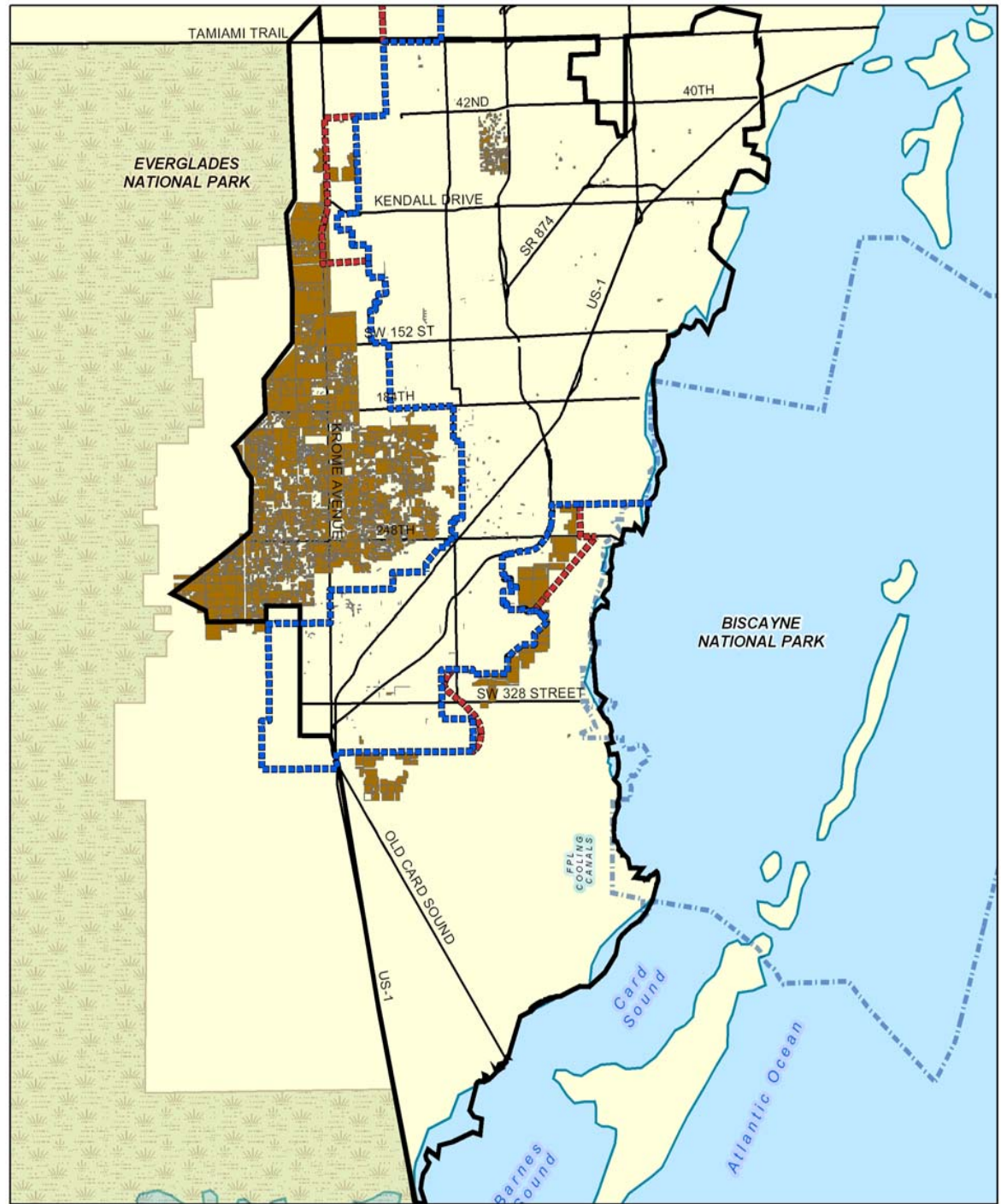


Land Use/Community Character

Rural Land



**Draft Preferred
Scenario
Remaining
Agricultural Land
2050**



Land Use/Community Character

Proximity of Housing and Employment to Transit **Total new units 204,277**

Transit Corridor	Baseline	Test Scenario 1B 2050	Test Scenario 2B 2050	Test Scenario 3B 2050	Draft Preferred Scenario
US 1	34,730	25,473	25,102	53,719	77,598
Kendall Dr.	17,085	5,680	1,634	33,481	10,806
Turnpike	9,445	571	192	12,932	3,294
Palmetto	7,895	2,004	2,146	8,551	6,008
Douglas Rd.	2,565	2,135	108	479	985
TOTAL	71,720	+35,863 18%	+29,182 14%	+109,162 53%	+98,691 48%

Land Use/Community Character

Parks Recreation and Open Space					
Park Acreage	Baseline	Test Scenario1B 2050	Test Scenario2B 2050	Test Scenario3B 2050	Draft Preferred Scenario
1-4	7,287	210	333	253	256
5-30		283	409	379	671
30-100		80	416	406	235
over 100		1,186	601	719	597
TOTAL		+1,759	+1,759	+1,757	+1,759



Sub-task 4.3: Economics

***Dr. Robert Cruz
Barry University***

Economic Base

Employment by Industry					
Industry	Baseline	Test Scenario1B 2050	Test Scenario2B 2050	Test Scenario3B 2050	Draft Preferred Scenario
Commercial	70%	82%	82%	82%	80%
Industrial	10%	6%	6%	6%	6%
Institutional	19%	12%	12%	12%	14%
Farm	0.9%	.09%	0.3%	0.3%	0.2%

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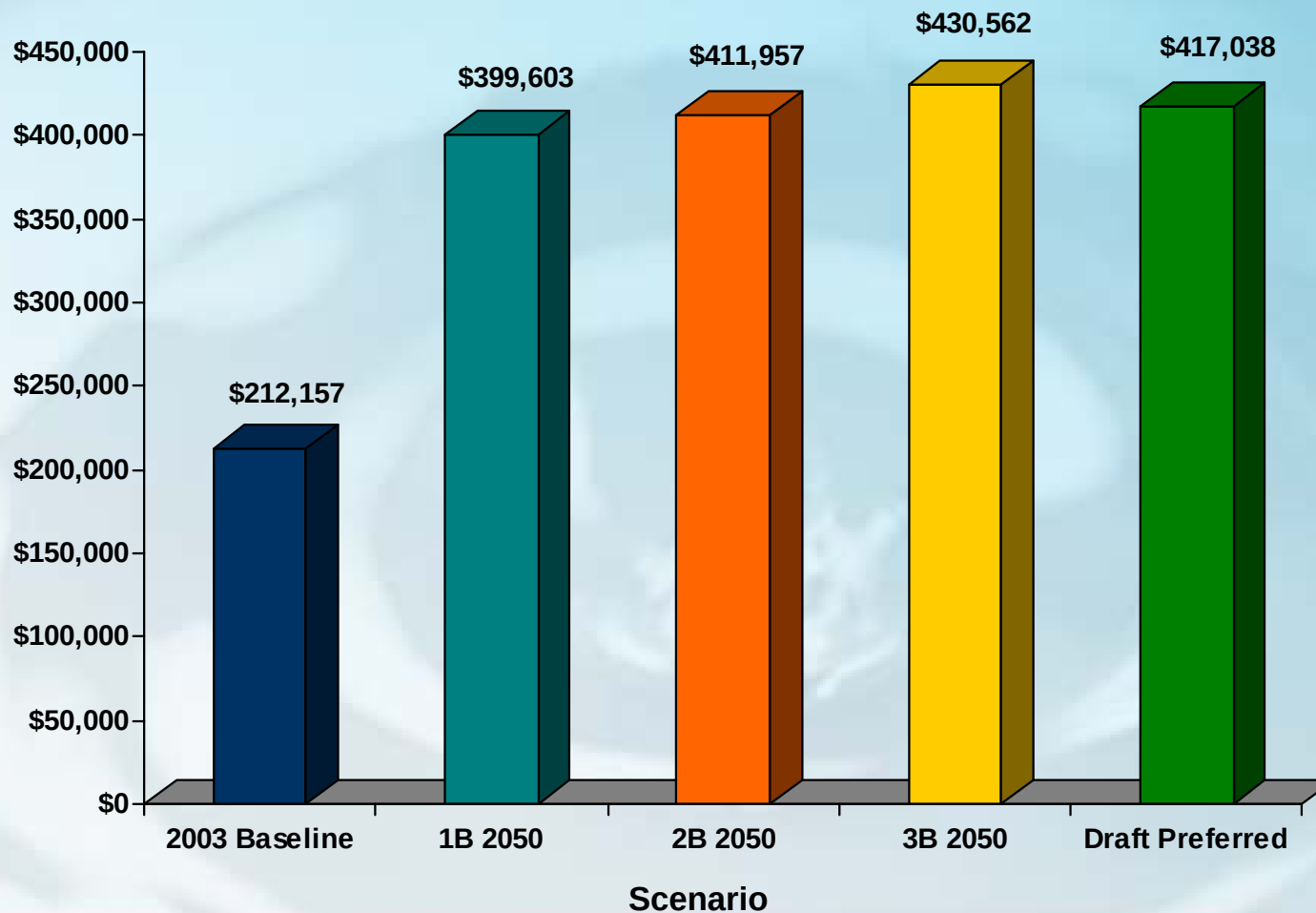
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Economic Base

Cost of Housing (2004 Dollars)



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Economic Base

Median Household Income (2003 Dollars)





Sub-task 4.3: Infrastructure

***Dr. Fadi Nassar, P.E.
Keith and Schnars, P.A.***

Infrastructure

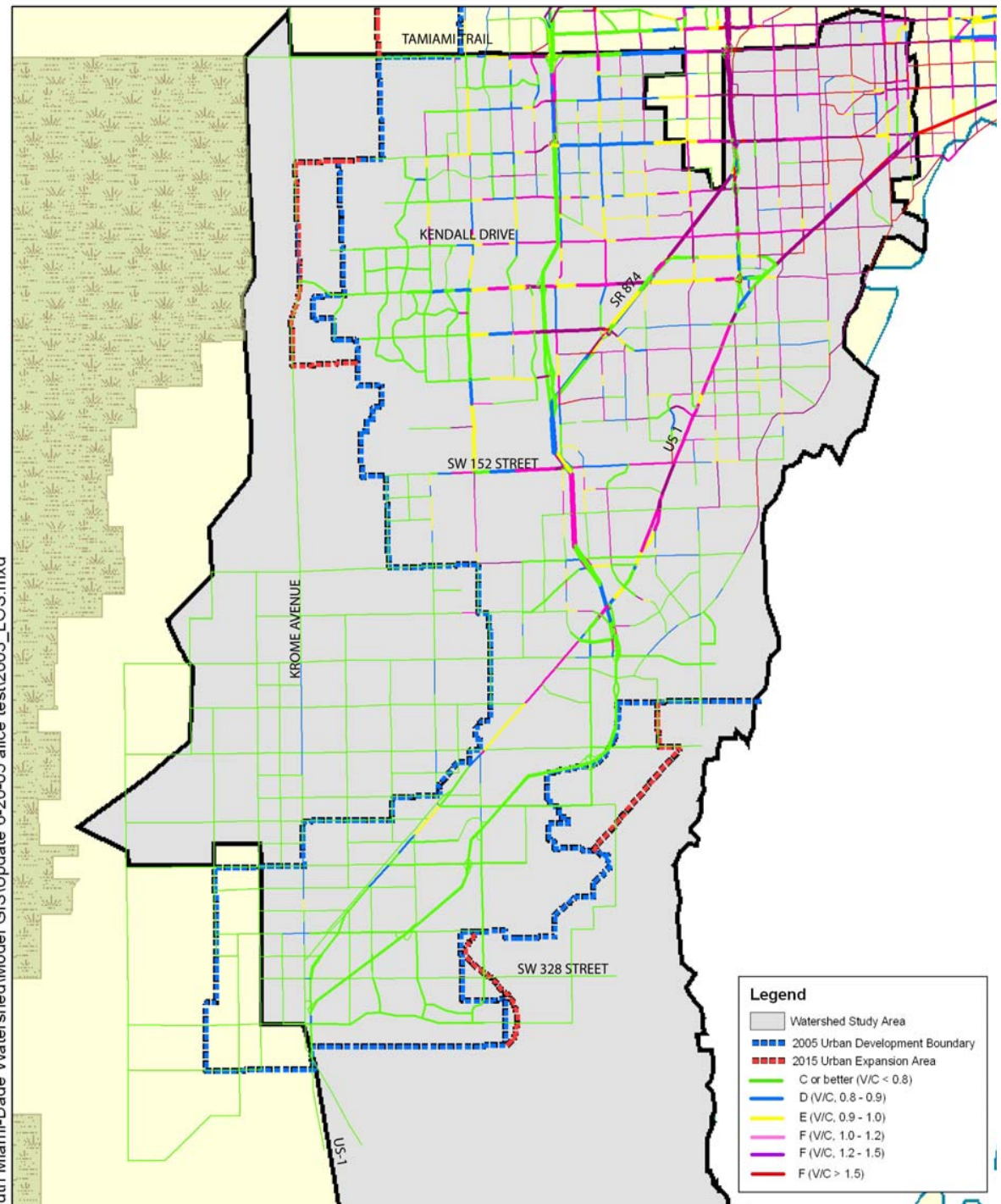
Transportation - Adopted Level of Service, 2050

	Test Scenario 1B 2050	Test Scenario 2B 2050	Test Scenario 3B 2050	Draft Preferred Scenario
Average Volume Capacity	1.02	1.0	0.98	0.96
Total Delays Due to Congestion - Hours	5,250,634	5,179,572	5,030,644	4,717,978
Total Cost to Improve Overcapacity Roads	2.1 billion	1.9 billion	1.9 billion	1.7 billion
Billion Miles per Year	24.4	23.9	23.4	22.8

Transportation Level of Service

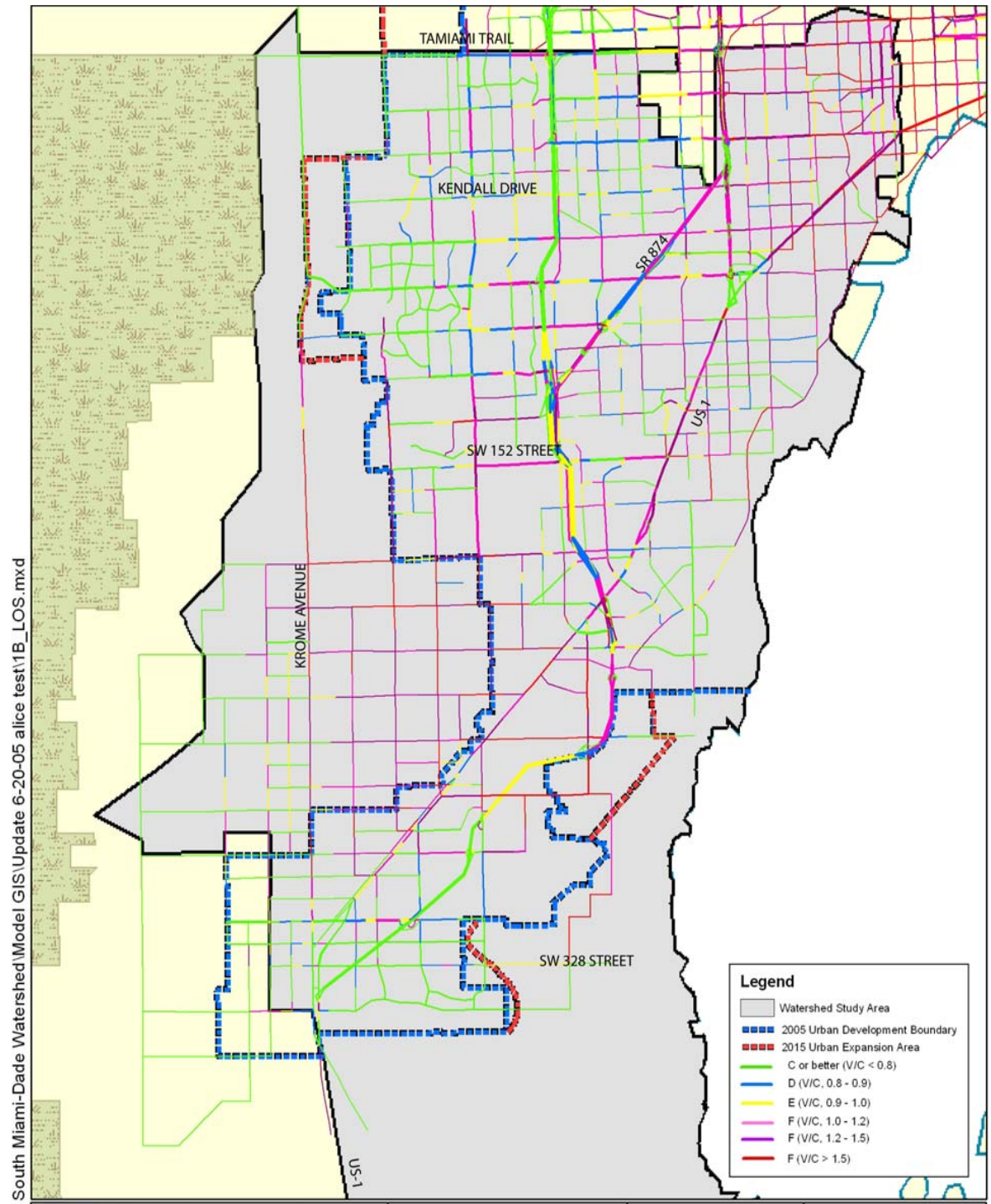
Baseline 2003

South Miami-Dade Watershed Model GIS Update 6-20-05 alic test 2003_LoS.mxd

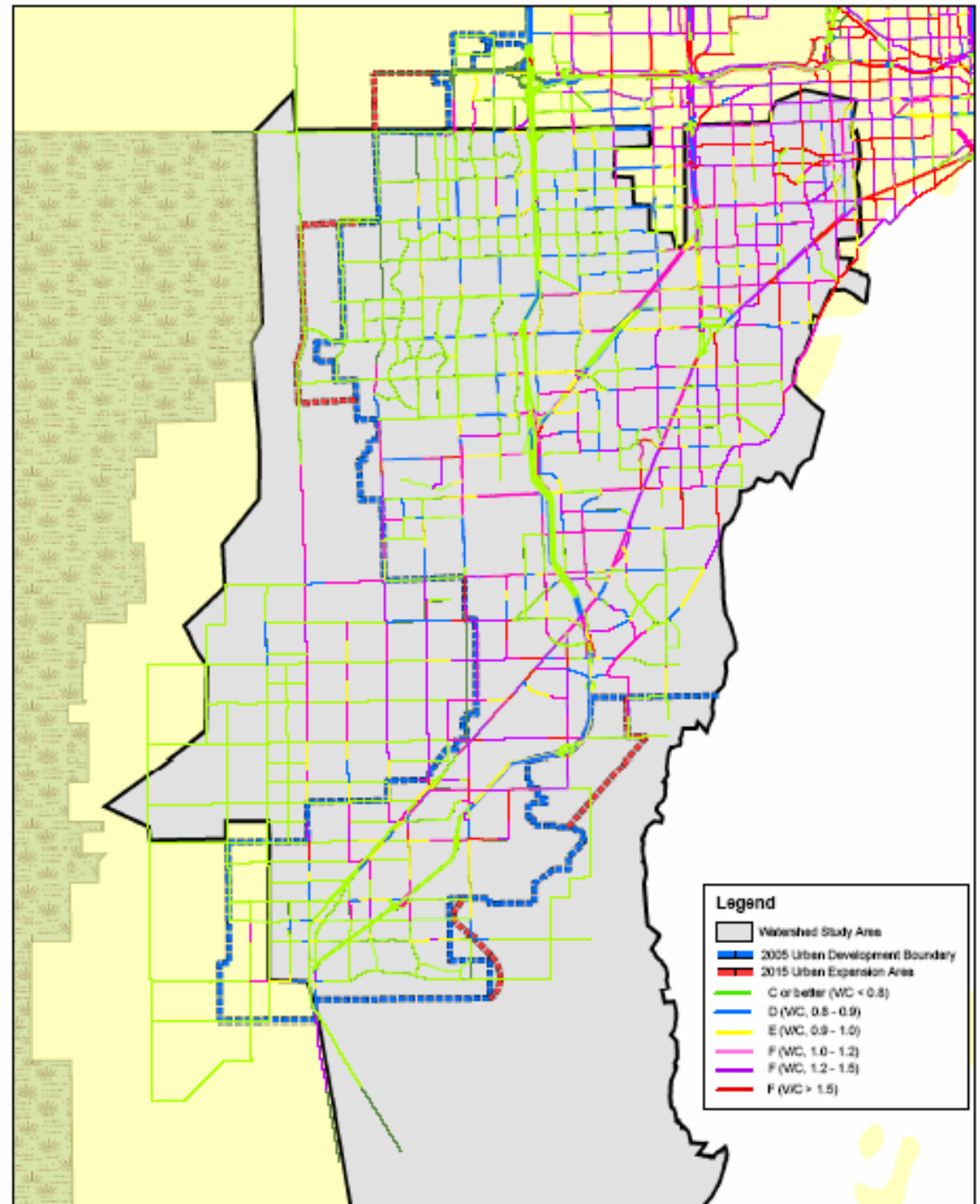


Transportation Level of Service

Scenario 1 2050



Draft Preferred Scenario Transportation Level of Service 2050



Infrastructure

Air Quality

Tons of Pollutants Per Day - 2050				
Pollutant	Test Scenario 1B 2050	Test Scenario 2B 2050	Test Scenario 3B 2050	Draft Preferred Scenario
VOC	21.19	20.91	20.11	20.15
CO	388.23	383.01	368.41	369.19
NOx	18.19	17.94	17.26	17.30



Sub-task 4.3: Infrastructure

***Ian Miller,
Ecology and Environment, Inc***

South Miami-Dade

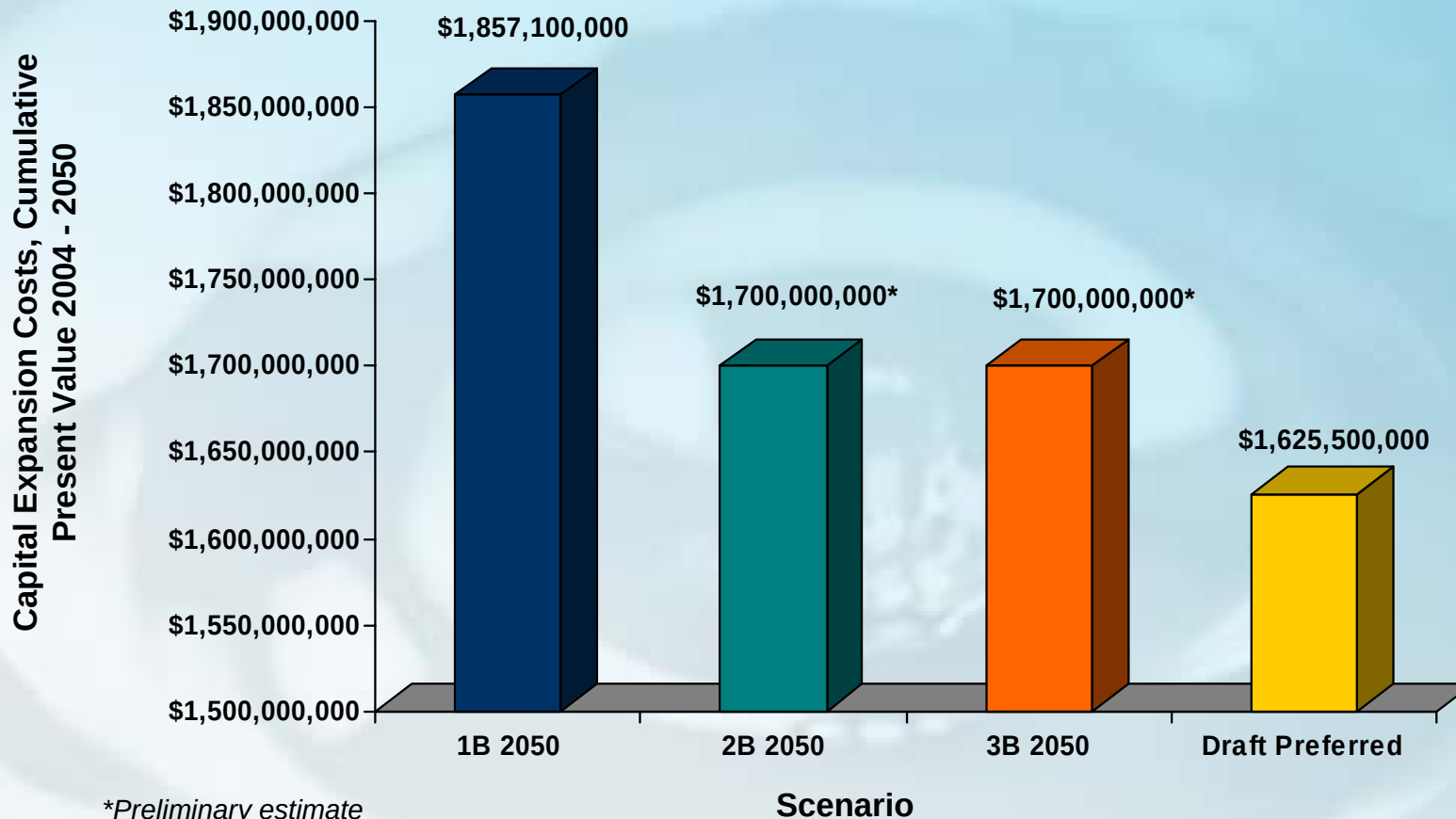
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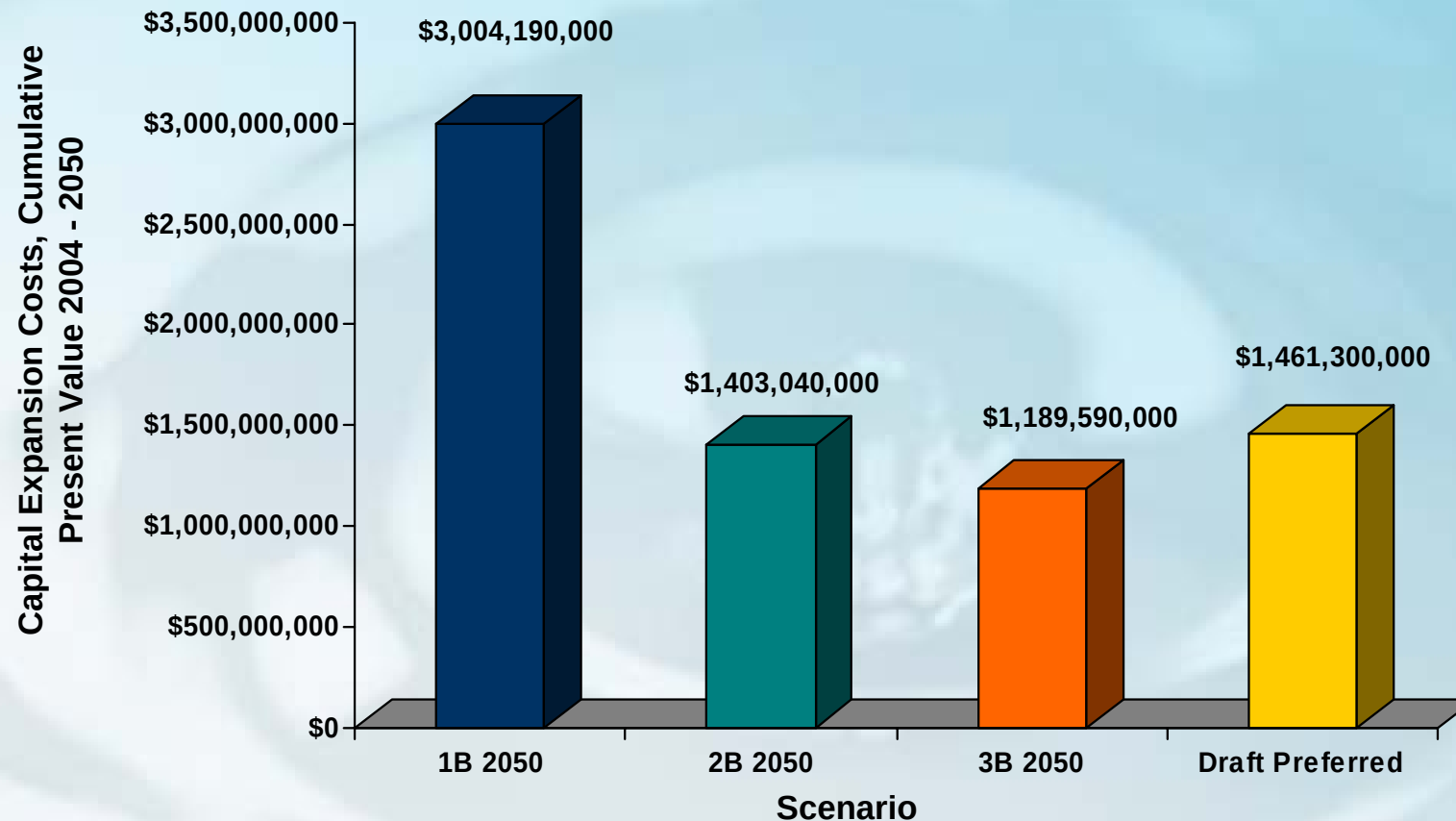
Infrastructure

Public Schools (2004 Dollars)



Infrastructure

Potable Water (2004 Dollars) = water connection fees, water mains, WTP capacity



Infrastructure

Wastewater (2004 Dollars) = sewer connection fees, force mains, gravity sanitary sewer lines, sewage pumping stations, WWTP capacity

