

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

JANUARY & FEBRUARY 2024

BIG CYPRESS BASIN HYDROLOGIC REPORT



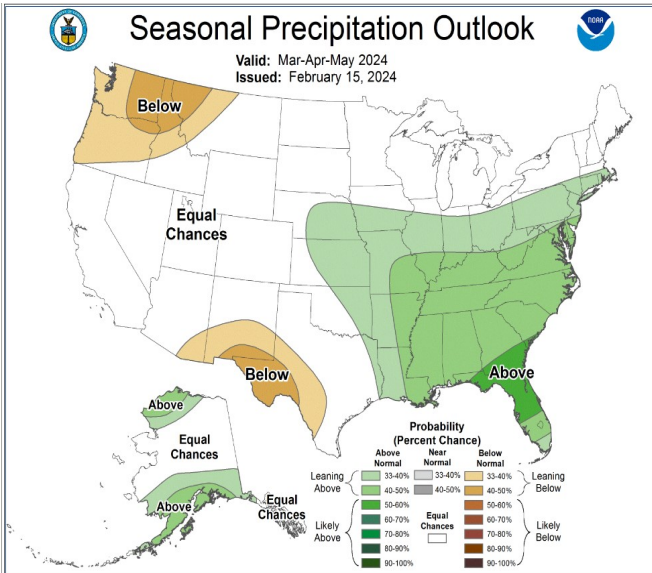
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SUMMARY OF HYDROLOGIC CONDITIONS IN THE BIG CYPRESS BASIN

January & February 2024

SUMMARY

The El Niño impacts on South Florida’s winter weather continued and provided wetter and colder conditions during January and February 2024, resulting in the Basin receiving 172% of average rainfall. The winter rainfall surplus has resulted in increased surface water, groundwater, and canal levels throughout the region and most are now well above 90th percentile for this time of year. According to NOAA’s seasonal outlook, the wetter than average conditions are expected to continue until May. The Basin canals are likely to remain steady with the system operated at the top of its ranges in water conservation mode, allowing continued aquifer recharge throughout March.



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Due to the increased and more summer like water levels, Basin operations may be adjusted in April to commence a managed gradual recession of canal and water levels so the region does not start the wet season with a completely saturated system.

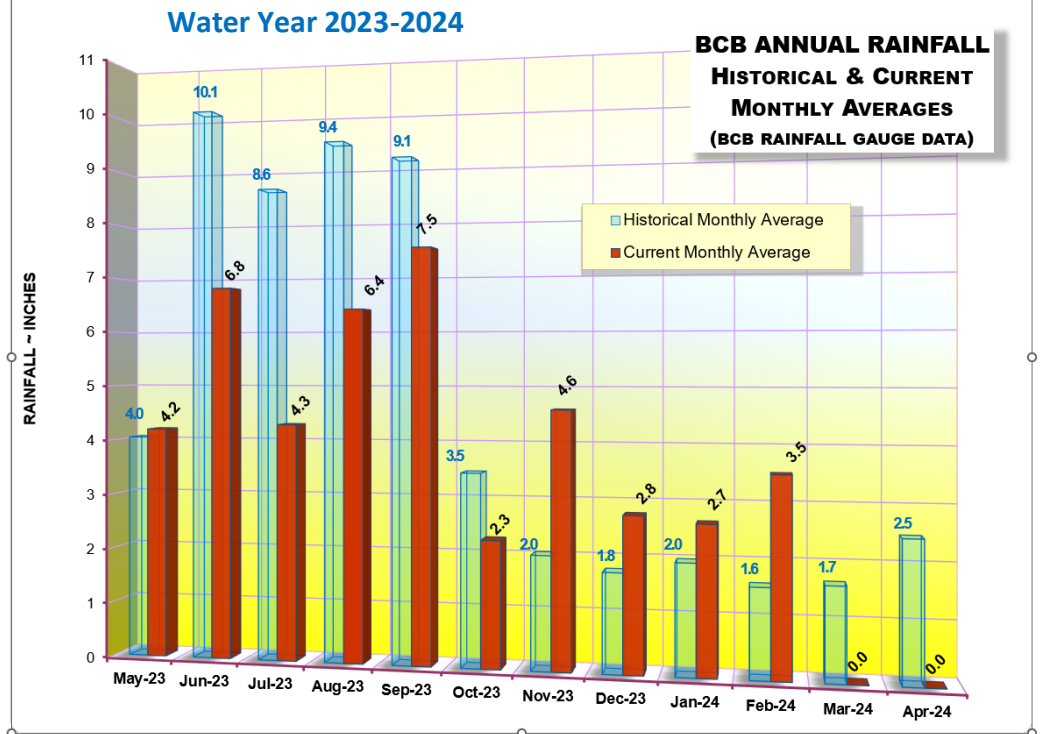
Much of the 2023-2024 water year rainfall deficit has been erased since the end of the 2023 “wet season”. The Basin’s rainfall deficit has gone from 18 inches in October and is now only 7 inches. If the El Niño rainfall trends continue, the Basin may end the water year (2023-2024) with an average or a surplus of rainfall.

January 2024 BCB RAINFALL

As measured by twenty-four (24) reporting stations (ref. **January Figures 1, 2, Table 1**), the basin-wide monthly average was 2.70 inches (136% of normal), well above the long term monthly average of 1.98 inches.

Based on collected gauge and radar data, the rainfall distribution across the Basin was not very uniform and ranged from 3.48 inches at the northwest gauge R-2 (Bonita Springs Water Plant) to 1.78 inches at the most southeastern gauge R-5 (Fakahatchee Strand HQ).

January Figure 3a shows the average rainfall for each of the Basin’s watersheds based on gauge adjusted radar. The Gordon River Extension basin received the highest rainfall with a **2.45-inch** areal average across the watershed and the lowest was the Barron River basin with **1.03 inches**, aligning with the individual rain gauge west (highest) to east (lowest) pattern. The Basin’s total areal weighted average rainfall was **1.84 inches**. The rainfall totals and their locality distribution across the



BCB/Lower West Coast are shown on **Figures 3, 3a** and **4**.

February 2024 BCB RAINFALL

The basin-wide monthly average was 3.50 inches (220% of normal), well above the long term monthly average of 1.60 inches (ref. **February Figures 1, 2, Table 1**). The rainfall distribution across the Basin was not very uniform in February, but a mirror image of that during January, ranging from 4.88 inches at the most southwest gauge at R-15 (Marco Island R.O. (Reverse Osmosis) Water Treatment Plant to the Immokalee Landfill R-3 gauge recording 2.57 inches. **February Figure 3a** shows the average rainfall for each of the Basin's watersheds based on gauge adjusted radar. The East Naples basin received the highest rainfall with a **3.73-inch** areal average across the watershed and the lowest was the Okaloacoochee basin with **2.93 inches**, close to the individual rain gauge southwest (highest) to northeast (lowest) pattern. The Basin's total areal weighted average rainfall was **3.23 inches**. The rainfall totals and their locality distribution across the BCB/Lower West Coast are shown on **February Figures 3** and **4**.

BCB CANAL SYSTEMS

For the majority of January and February, the canals were maintained in water conservation mode to hold as much water as possible to promote groundwater recharge. There were however discharges through coastal structures primarily in response some of the intermittent cold fronts that brought widespread rainfall. At the end of February, the system is currently above the 90th percentile with the exception of the reaches between GG5 and GG7 and FU5 and FU4S which are between the 75th percentile and 90% percentile (**Figure 4a**).

GOLDEN GATE SYSTEM

As is standard operating procedure during dry season, control structures in the Golden Gate Main canal system were managed to conserve as much water as possible to promote groundwater recharge. However, the notable rainfall that occurred required intermittent transition of the system to a flood control operations that then appropriately resulted in discharge into tidal waters. Despite the outflow, water levels in the Golden Gate system remained elevated for the month and are currently above the 90th percentile but for the reach between GG5 and GG7 (ref **Figures 6A, 6B, & 6C**).

COCOHATCHEE SYSTEM

The Cocohatchee and Corkscrew canal systems experienced the same pattern as did Golden Gate and thus the same operational management that appropriately responded with discharge into tidal waters. Despite the outflow, water levels in the Cocohatchee system as well as the Corkscrew system remained elevated for the month and are currently above the 90th percentile (ref **Figures 6A, 6B, & 6C**).

FAKA UNION SYSTEM

The Faka Union system was maintained in water conservation mode to hold as much water as possible to promote groundwater recharge. The entire system was above the 90th percentile by the end of January and the same for February but for the FU4S (ref **Figure 7A & 7B**) that dropped to between the 75th percentile and 90% percentile.

HENDERSON CREEK SYSTEM

Water control structures in the Henderson Creek system were operated in water conservation mode which prevents salt water intrusion and prevents overdrainage, with only minor discharges into Rookery Bay tidal waters for January-February. Both water control structures remained fully closed and discharges only occurred over the fixed crest weir at HC1. Canal levels in HC1 and HC2 are above the 90th percentile due to the rainfall over this basin (ref **Figure 8A & 8B**).

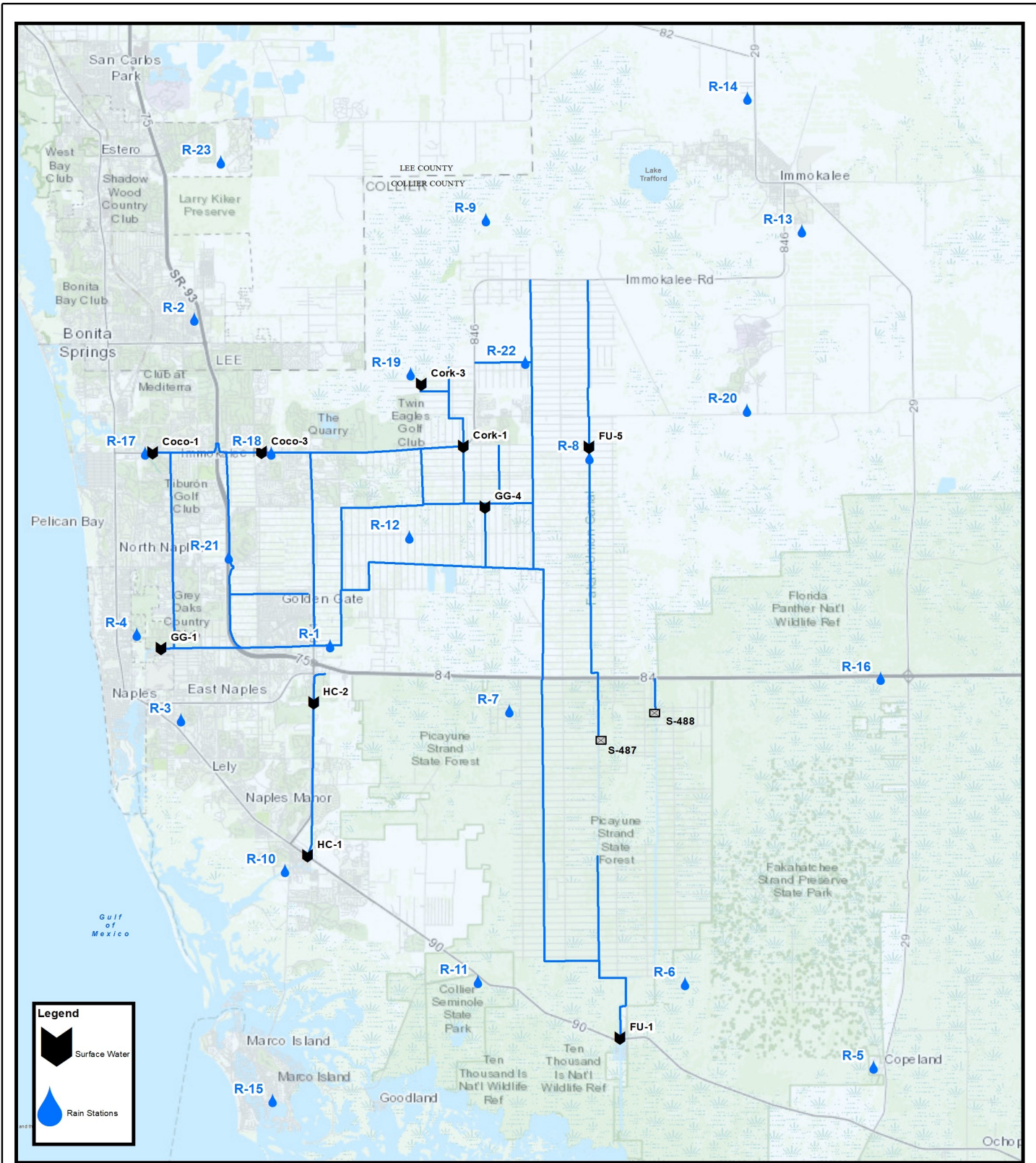
CORKSCREW SWAMP

Figure 10 shows the historical trends for Corkscrew Swamp, Bird Rookery, and the Cork 3 structure, and the 2023/2024 corresponding water levels. Operations continued in the Corkscrew Canal to maintain levels near or above historical maximums to conserve water. All showed the expected response from the January and February rainfall and notably, Cork3 water levels are more than 3.5 ft above the 50th percentile and BRDROOK/CRKSWPS along with all other regions of CREW appear to be at levels typical for mid-September and not the end of February. Lake Trafford water levels remained elevated throughout the month and is currently close to the 90th percentile. (**Figure 11**).

Figures 12 and Figure 13 show the locations for Southern Corkscrew (SOCREW) sites 1 through 6, all of which are combination surface and groundwater monitoring wells, as well as the historical trends for SOCREW1 and SOCREW2 which both remained above the 90th percentile. While SOCREW sites 3, 4, 5 and 6 only have a period of record for approximately 1.5 years, all stations remained closer to typical levels seen during the wet season.

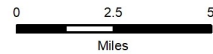
BIG CYPRESS BASIN & LOWER WEST COAST GROUNDWATER LEVELS

The current reporting (02/29/2024) for the Lower West Coast [LWC] groundwater levels show all remaining approximately constant since December 2023. The exception is C-948R (Golden Gate, Mid Hawthorn) which had an 8% increase since December 2023, rising steeply to above the 50th percentile. C-462 (Immokalee, Lower Tamiami) remained above ground surface; C-1224 (Marco lakes, Lower Tamiami) and C-951R (Golden Gate, Lower Tamiami) are above the 95th percentile. L-2194 (Bonita Springs, Sandstone) and L-2195 (Bonita Springs, Surficial) are at or above the 75th percentile, and C-1004R (Naples, Lower Tamiami) and L-738 (Bonita Springs, Lower Tamiami) are between the 50th—75th percentile (ref. **Table 2, Figure 9**).



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FIGURE 1

Hydrologic Station Map

Collier County, Florida



Hydrog1_map_07_2016.mxd

TABLE 1
RAINFALL REPORT - JANUARY 2024
DISTRICT/BASIN RAINFALL STATIONS
 (ALL NUMBERS ARE IN INCHES)

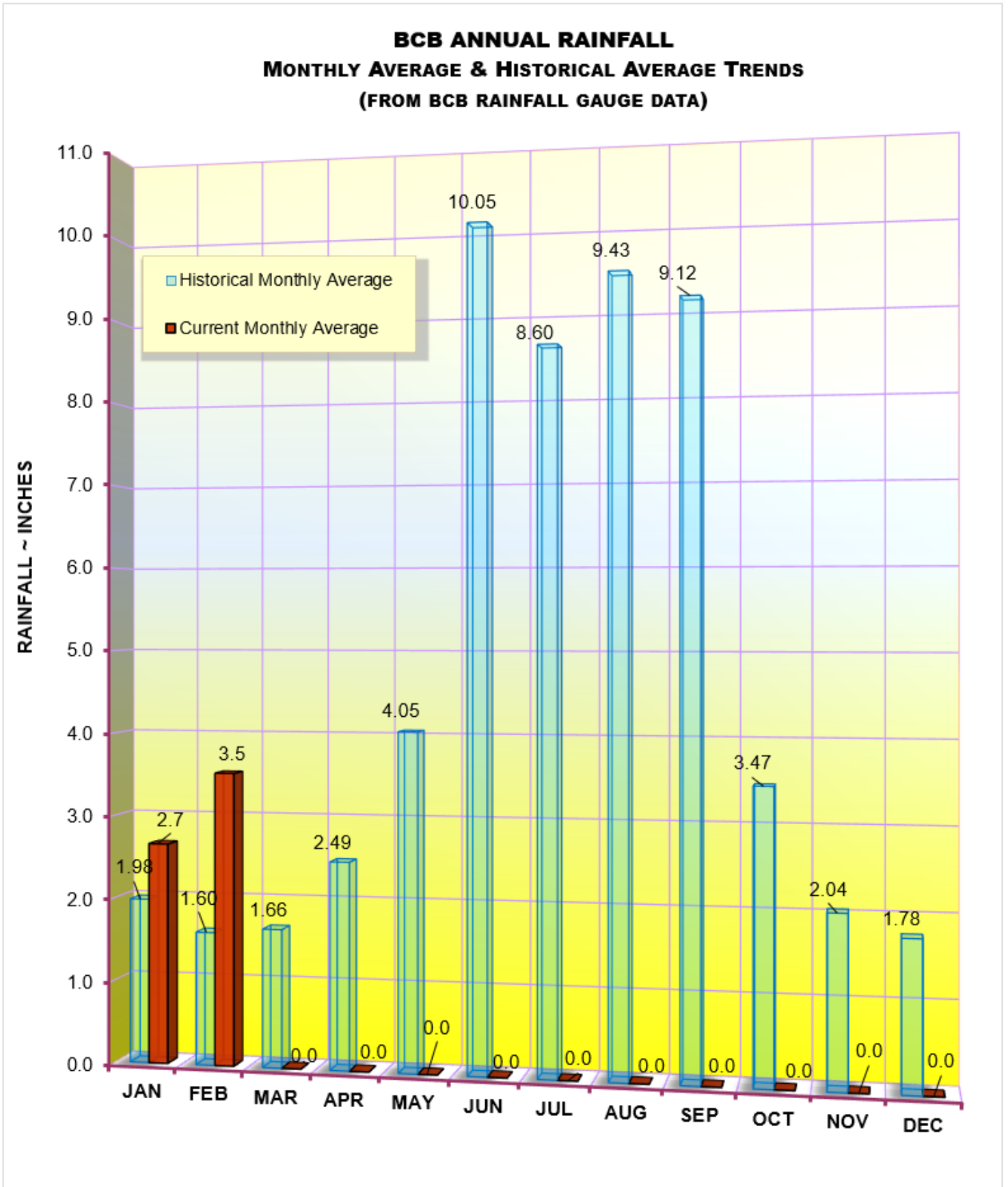
STATION INDEX NO.	STATION NAME	JANUARY 2024	LONG TERM MONTHLY AVERAGE	MONTHLY DIFFERENCE	CALENDAR YEAR 2024 CUMULATIVE TOTAL	AVERAGE CALENDAR YEAR TO DATE	YEAR TO DATE DIFFERENCE
R-1	GG#3	2.47	2.65	-0.18	2.47	2.65	-0.18
R-2	BONITA SPRINGS WATER PLANT	3.48	1.98	1.50	3.48	1.98	1.50
R-3	COLLIER COUNTY COURTHOUSE	2.13	1.89	0.24	2.13	1.89	0.24
R-4	FREEDOM PARK	2.33	2.61	-0.28	2.33	2.61	-0.28
R-5	FAKAHATCHEE STRAND HQ	1.78	1.77	0.01	1.78	1.77	0.01
R-6	DAN HOUSE PRAIRIE	1.97	1.55	0.42	1.97	1.55	0.42
R-7	SGGE WEATHER STATION	2.62	1.74	0.88	2.62	1.74	0.88
R-8	FAKA UNION #5	2.90	2.79	0.11	2.90	2.79	0.11
R-9	CORKSCREW SWAMP NORTH END	3.19	1.87	1.32	3.19	1.87	1.32
R-10	ROOKERY BAY HQ	2.43	2.01	0.42	2.43	2.01	0.42
R-11	COLLIER SEMINOLE STATE PARK	2.33	1.84	0.49	2.33	1.84	0.49
R-12	G.G. FIRE STATION	2.80	1.98	0.82	2.80	1.98	0.82
R-13	IMMOKALEE LANDFILL	2.66	2.16	0.50	2.66	2.16	0.50
R-14	IFAS	2.23	1.96	0.27	2.23	1.96	0.27
R-15	MARCO R.O. PLANT	2.71	2.44	0.27	2.71	2.44	0.27
R-16	FAKAHATCHEE STRAND NORTH END	2.38	2.37	0.01	2.38	2.37	0.01
R-17	COCO#1	2.91	1.79	1.12	2.91	1.79	1.12
R-18	COCO#3	3.05	1.69	1.36	3.05	1.69	1.36
R-19	BIRD ROOKERY	3.28	1.52	1.76	3.28	1.52	1.76
R-20	AVE MARIA	2.58	2.19	0.39	2.58	2.19	0.39
R-21	I75W2	3.25	1.53	1.72	3.25	1.53	1.72
R-22	GG#7	3.12	1.42	1.70	3.12	1.42	1.70
R-23	FPWX	2.21	1.84	0.37	2.21	1.84	0.37
R-24	DSOTO10	2.95	New Site	New Site	New Site	No Historical Data	
AVERAGES		2.66	1.98	0.67	2.64	1.98	0.66

TABLE 1
RAINFALL REPORT - FEBRUARY, 2024
DISTRICT/BASIN RAINFALL STATIONS
 (ALL NUMBERS ARE IN INCHES)

STATION INDEX NO.	STATION NAME	FEBRUARY 2024	LONG TERM MONTHLY AVERAGE	MONTHLY DIFFERENCE	CALENDAR YEAR 2024 CUMULATIVE TOTAL	AVERAGE CALENDAR YEAR TO DATE	YEAR TO DATE DIFFERENCE
R-1	GG#3	4.04	1.08	2.97	6.51	3.72	2.79
R-2	BONITA SPRINGS WATER PLANT	2.92	1.90	1.02	6.40	3.88	2.52
R-3	COLLIER COUNTY COURTHOUSE	4.06	1.87	2.19	6.19	3.76	2.43
R-4	FREEDOM PARK	3.25	1.08	2.17	5.58	3.69	1.89
R-5	FAKAHATCHEE STRAND HQ	3.05	1.85	1.20	4.83	3.62	1.21
R-6	DAN HOUSE PRAIRIE	3.89	1.43	2.46	5.86	2.98	2.88
R-7	SGGE WEATHER STATION	3.94	1.51	2.43	6.56	3.25	3.31
R-8	FAKA UNION #5	3.87	1.56	2.31	6.77	4.35	2.42
R-9	CORKSCREW SWAMP NORTH END	2.95	1.63	1.32	6.14	3.50	2.64
R-10	ROOKERY BAY HQ	4.57	1.59	2.98	7.00	3.61	3.39
R-11	COLLIER SEMINOLE STATE PARK	3.91	1.60	2.31	6.24	3.44	2.80
R-12	G.G. FIRE STATION	3.75	1.78	1.97	6.55	3.76	2.79
R-13	IMMOKALEE LANDFILL	2.57	1.78	0.79	5.23	3.95	1.28
R-14	IFAS	3.03	2.00	1.03	5.26	3.96	1.30
R-15	MARCO R.O. PLANT	4.88	1.88	3.00	7.59	4.32	3.27
R-16	FAKAHATCHEE STRAND NORTH END	3.79	2.09	1.70	6.17	4.46	1.71
R-17	COCO#1	2.65	1.82	0.83	5.56	3.60	1.96
R-18	COCO#3	3.08	1.82	1.26	6.13	3.51	2.62
R-19	BIRD ROOKERY	3.25	1.01	2.24	6.53	2.53	4.00
R-20	AVE MARIA	3.24	1.73	1.51	5.82	3.92	1.90
R-21	I75W2	3.43	1.02	2.41	6.68	2.54	4.14
R-22	GG#7	3.08	1.08	2.00	6.20	2.50	3.70
R-23	FPWX	3.09	1.67	1.42	5.30	3.51	1.79
R-24	DSOTO10	4.28	New Site	New Site	New Site	No Historical Data	

AVERAGES	3.52	1.60	1.92	6.13	3.58	2.55
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FIGURE 2
BCB GAUGE RAINFALL MONTHLY AVERAGES
 BCB 2024 Rainfall - 6.2" BCB Average Rainfall -3.6"
 Surplus 2.6" - 172 % of Historical Monthly Average



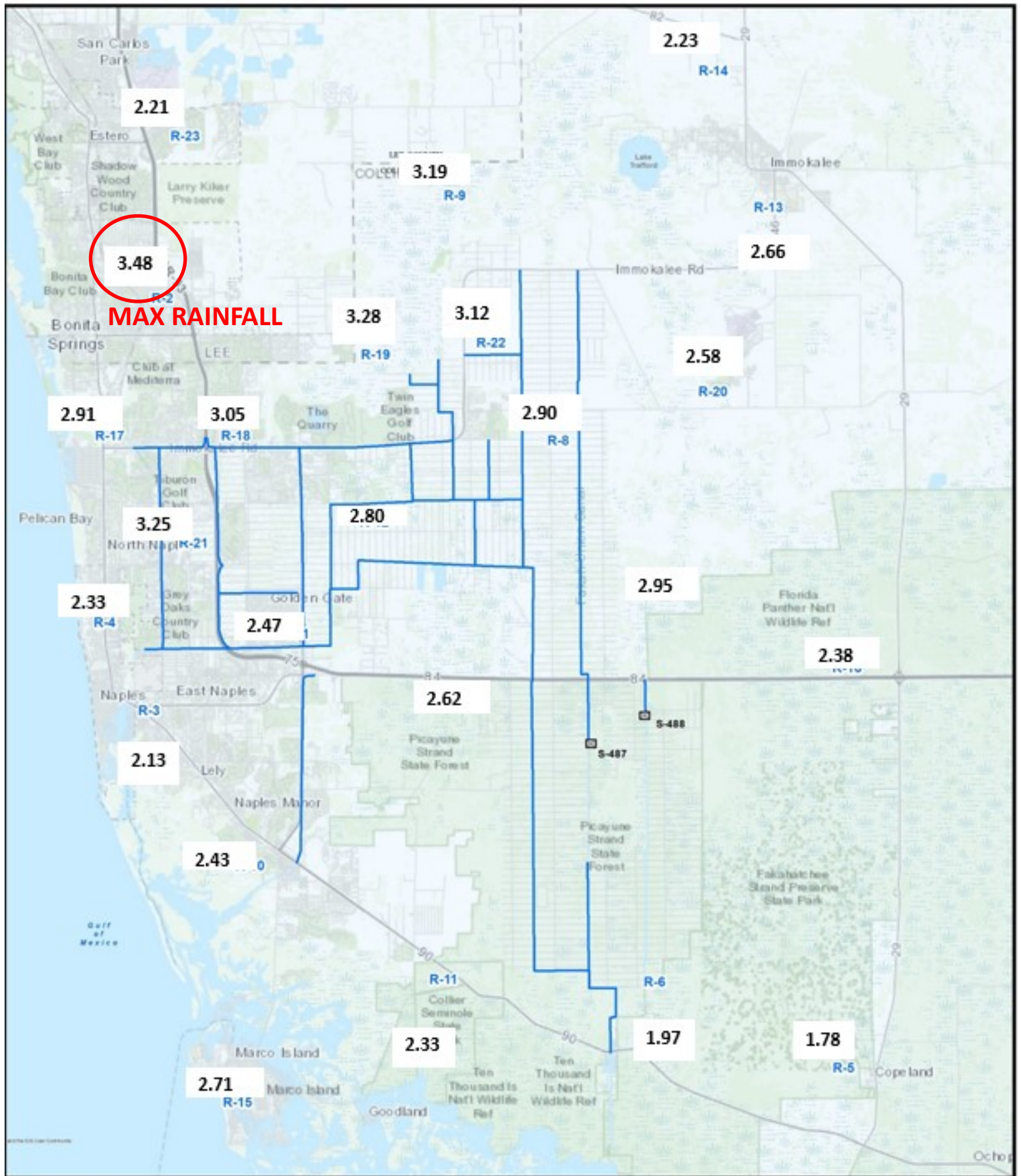


FIGURE 3
BCB RAINFALL DISTRIBUTION
JANUARY 2024

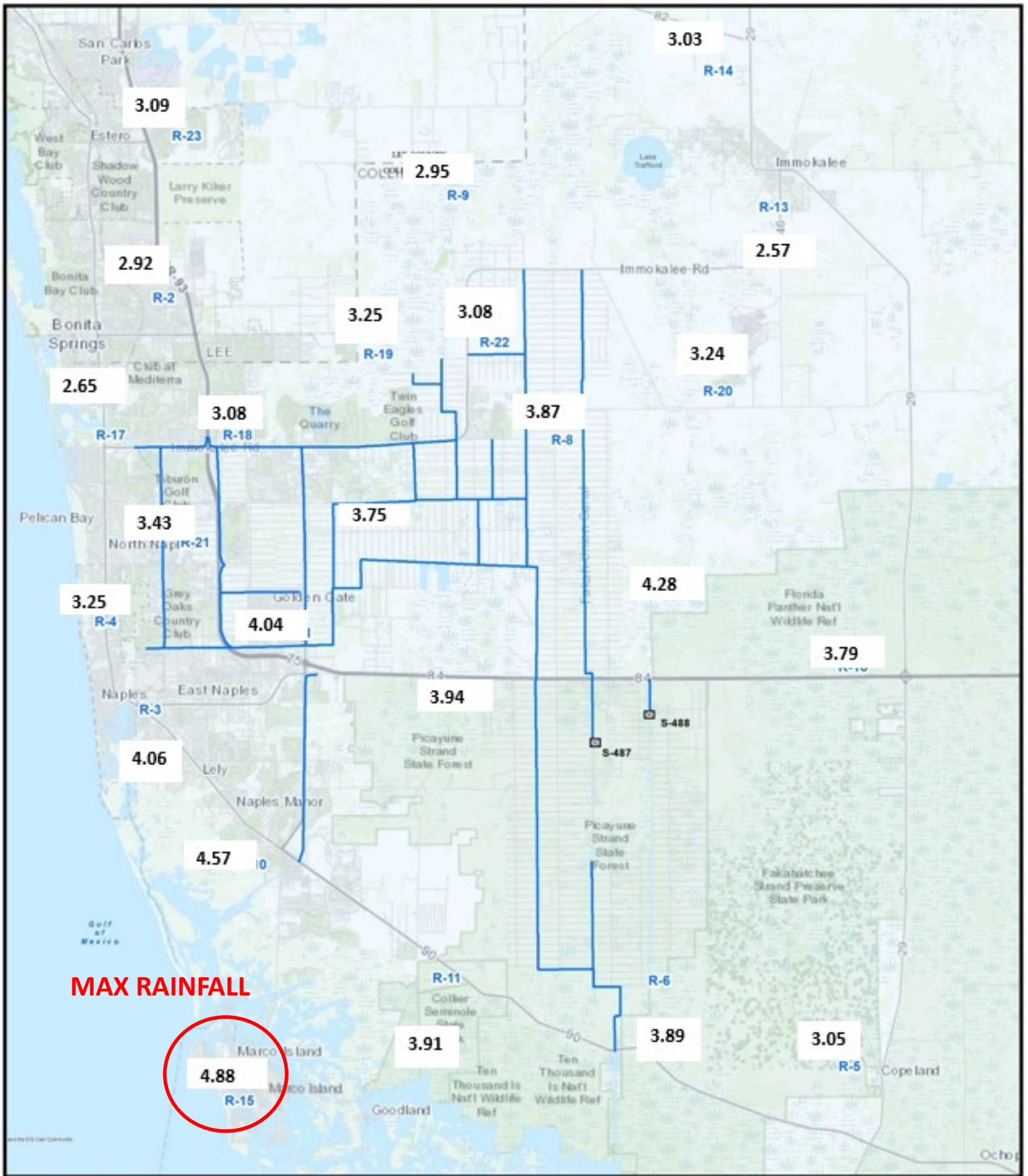
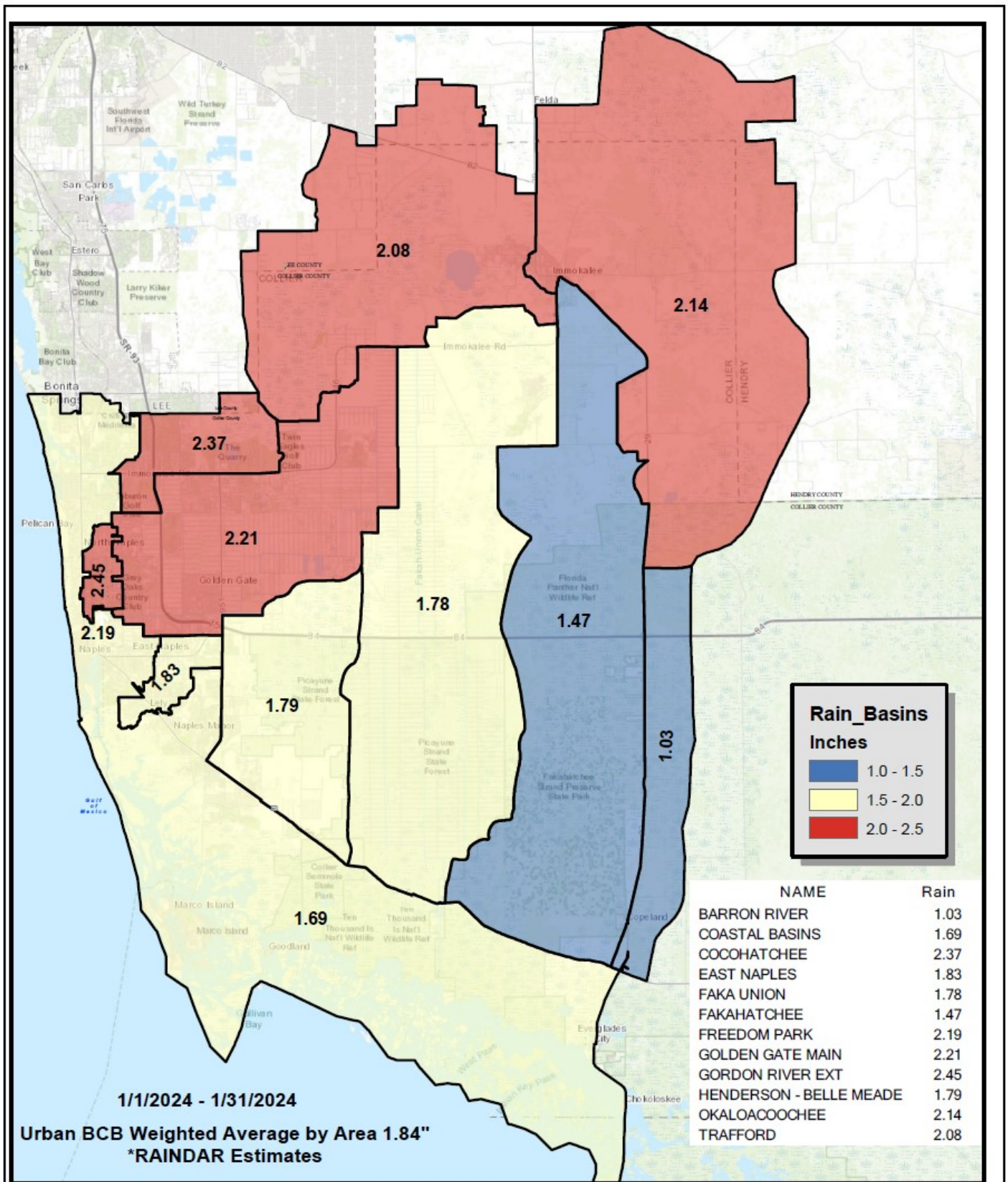
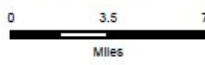


FIGURE 3
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*Rainfall estimates based on gauge adjusted radar

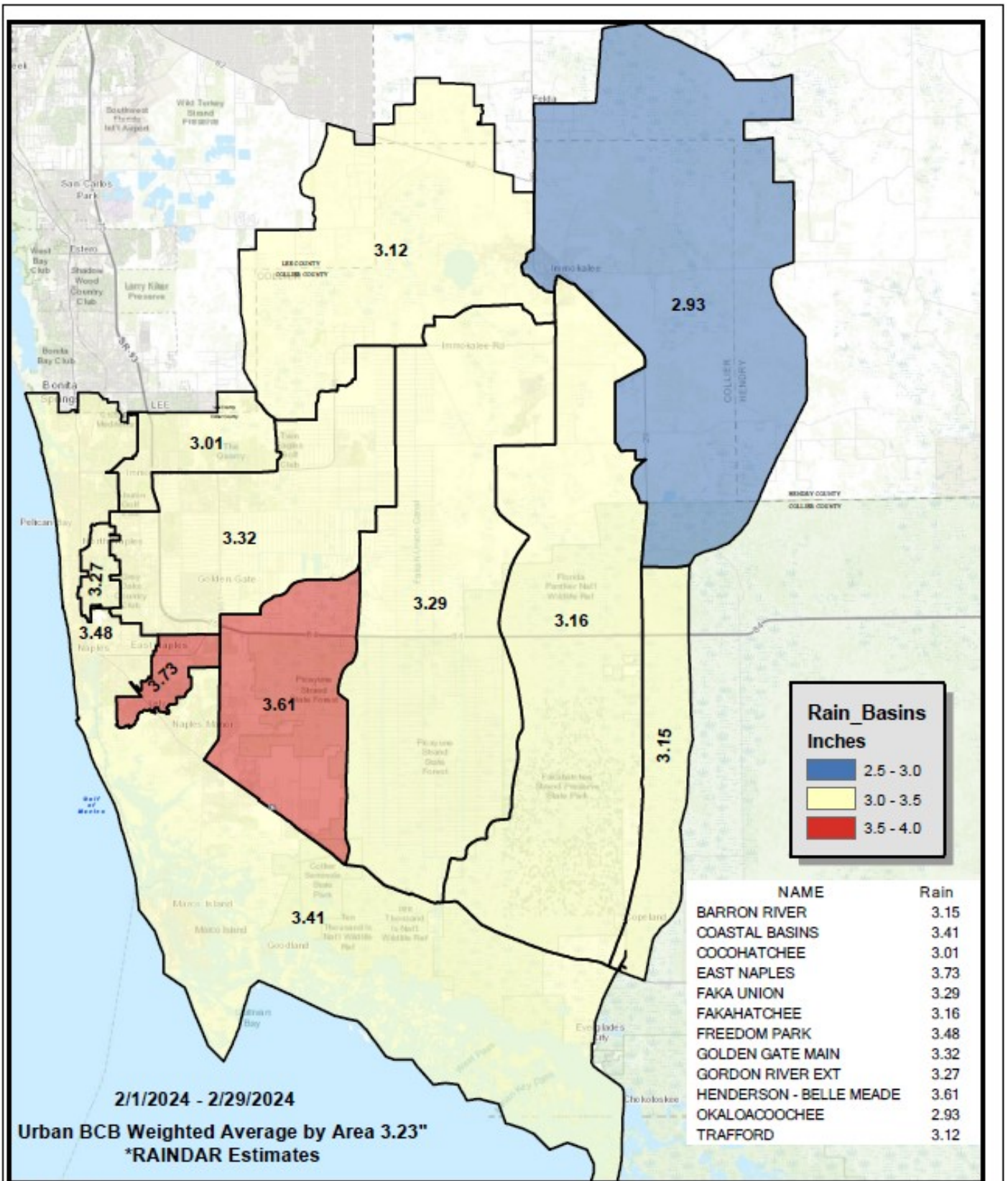


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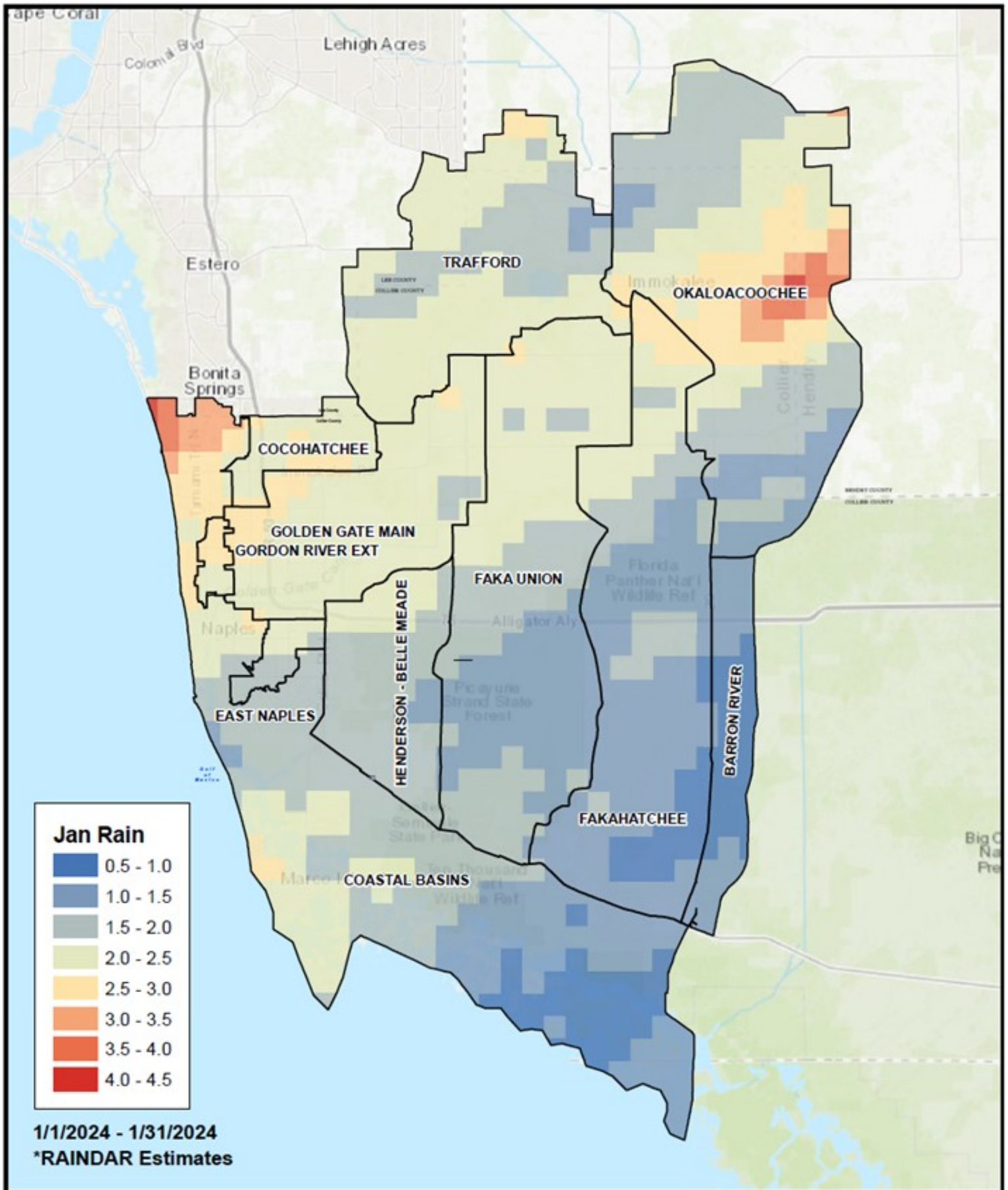
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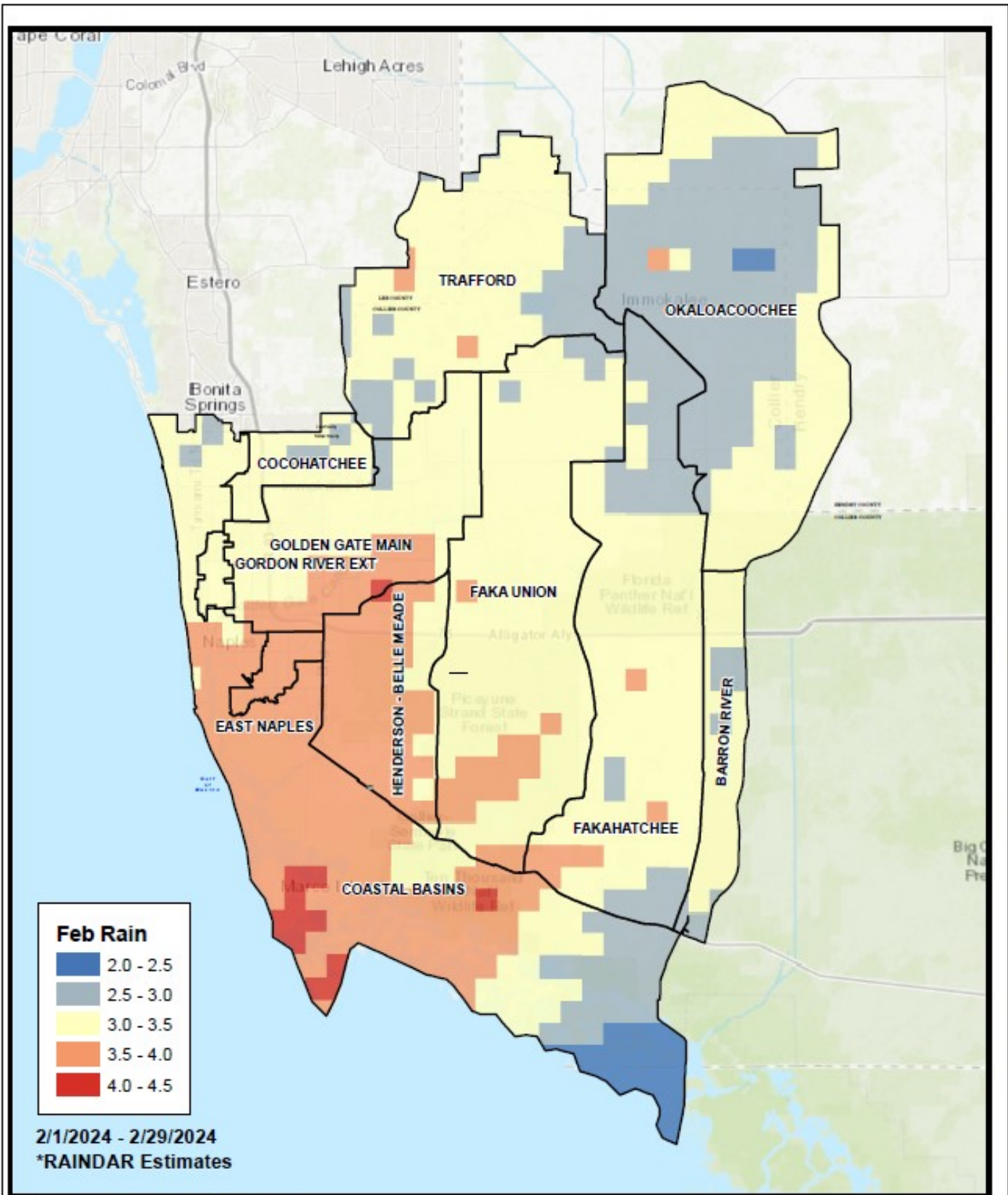
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FEBRUARY 2024—FIGURE 3a



JANUARY 2024—FIGURE 4



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*Rainfall estimates based on gauge adjusted radar



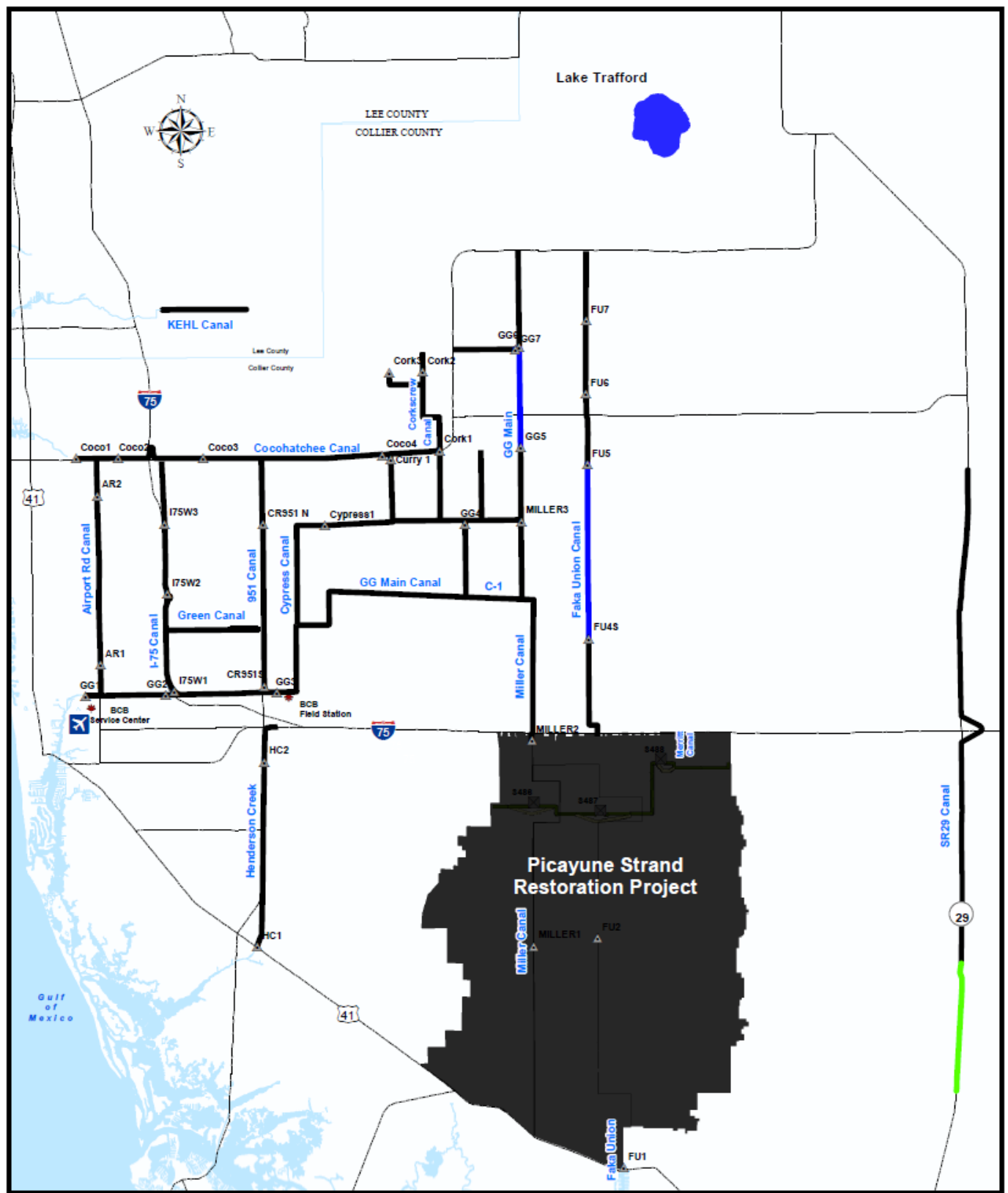
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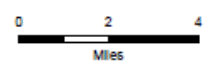
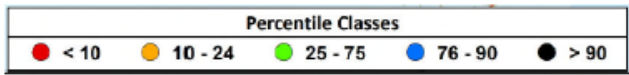


FEBRUARY 2024—FIGURE 4



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* Based on period of record for each canal reach


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FIGURE 4A

Figure 6A Cocohatchee Canal Historic Average Daily Headwater Percentiles

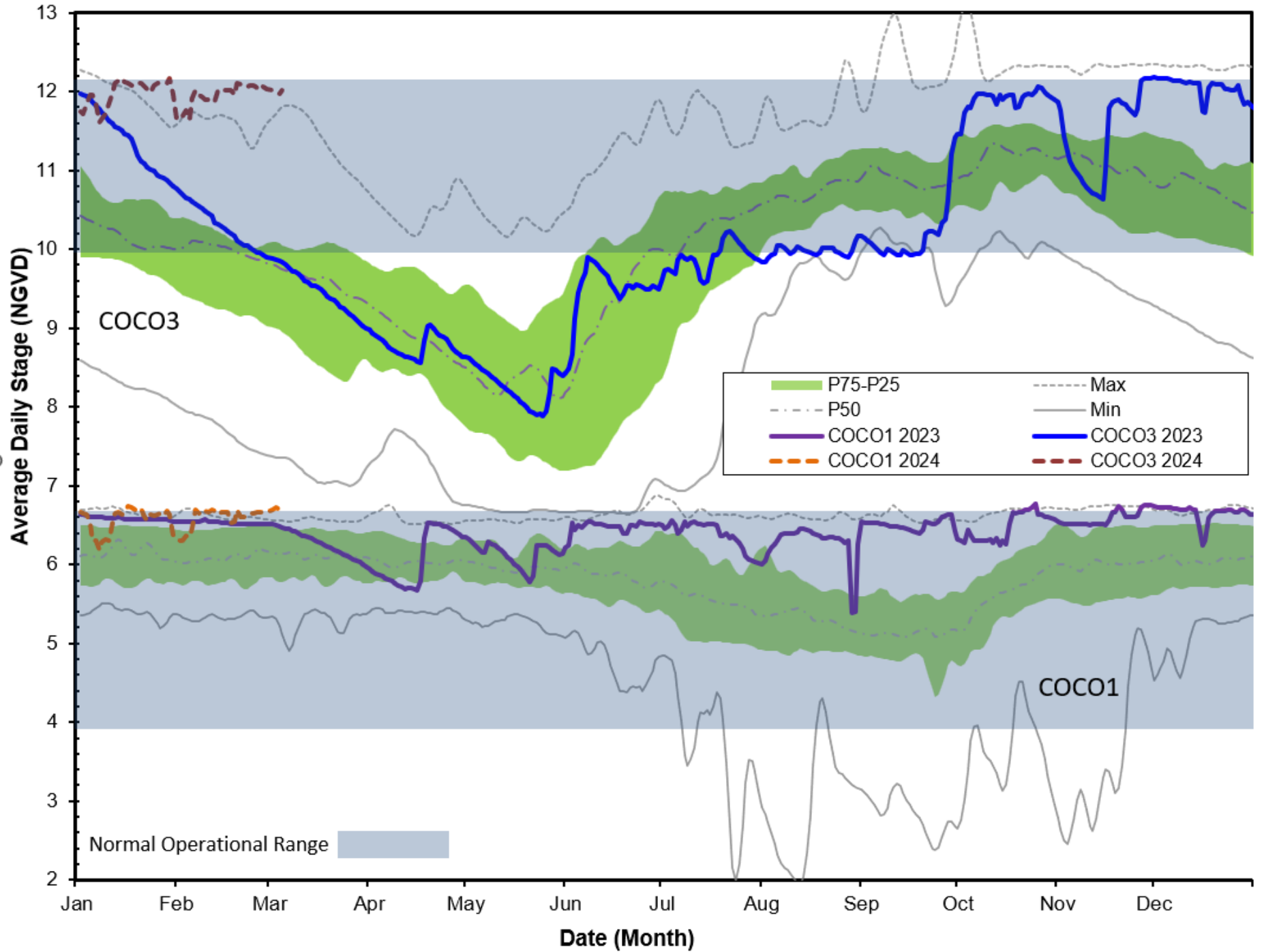


Figure 6B - CORK1 Historic Daily Headwater Percentiles (1989 - 2022)

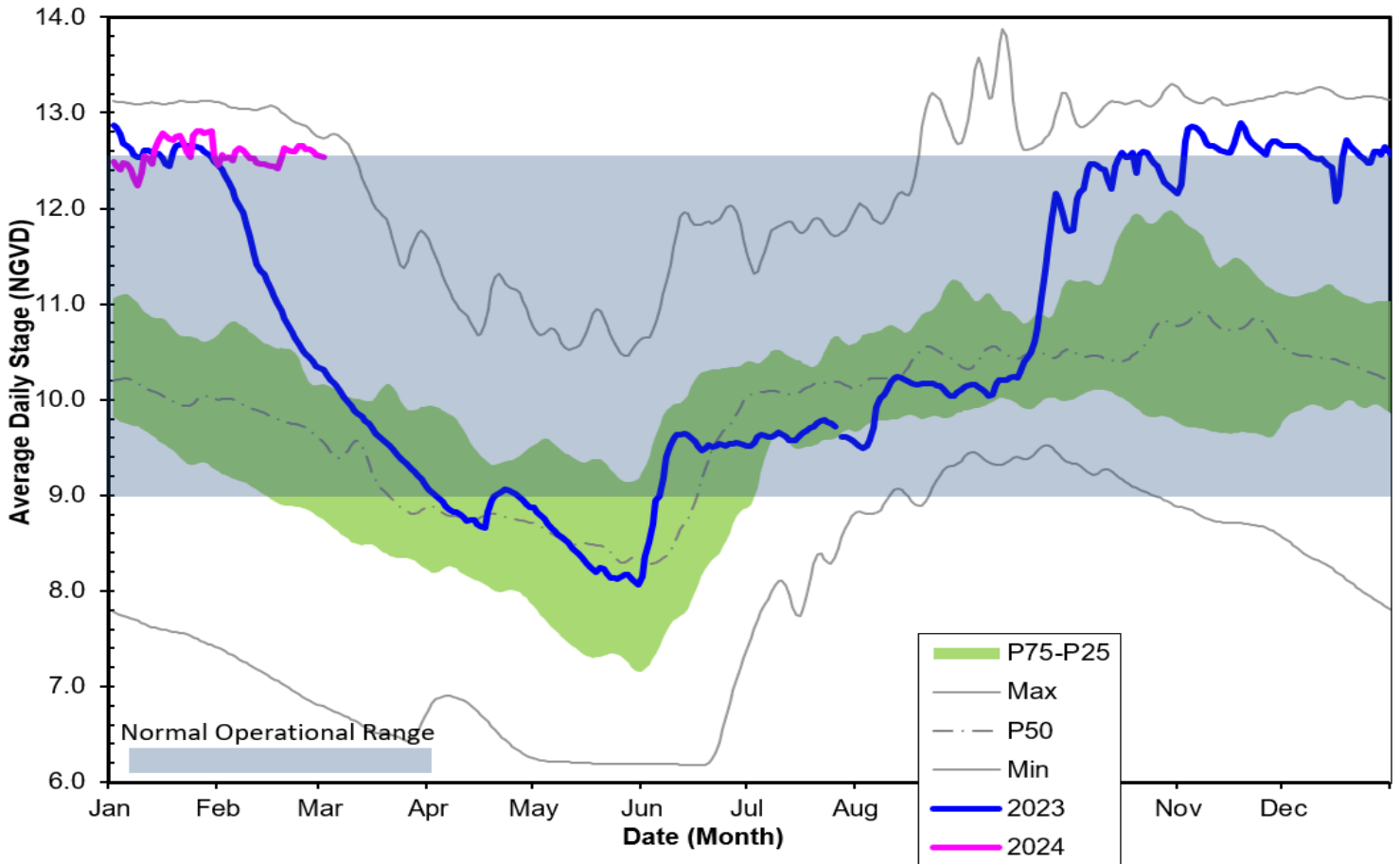


Figure 6C - CORK3 Historic Daily Headwater Percentiles (2004 - 2022)

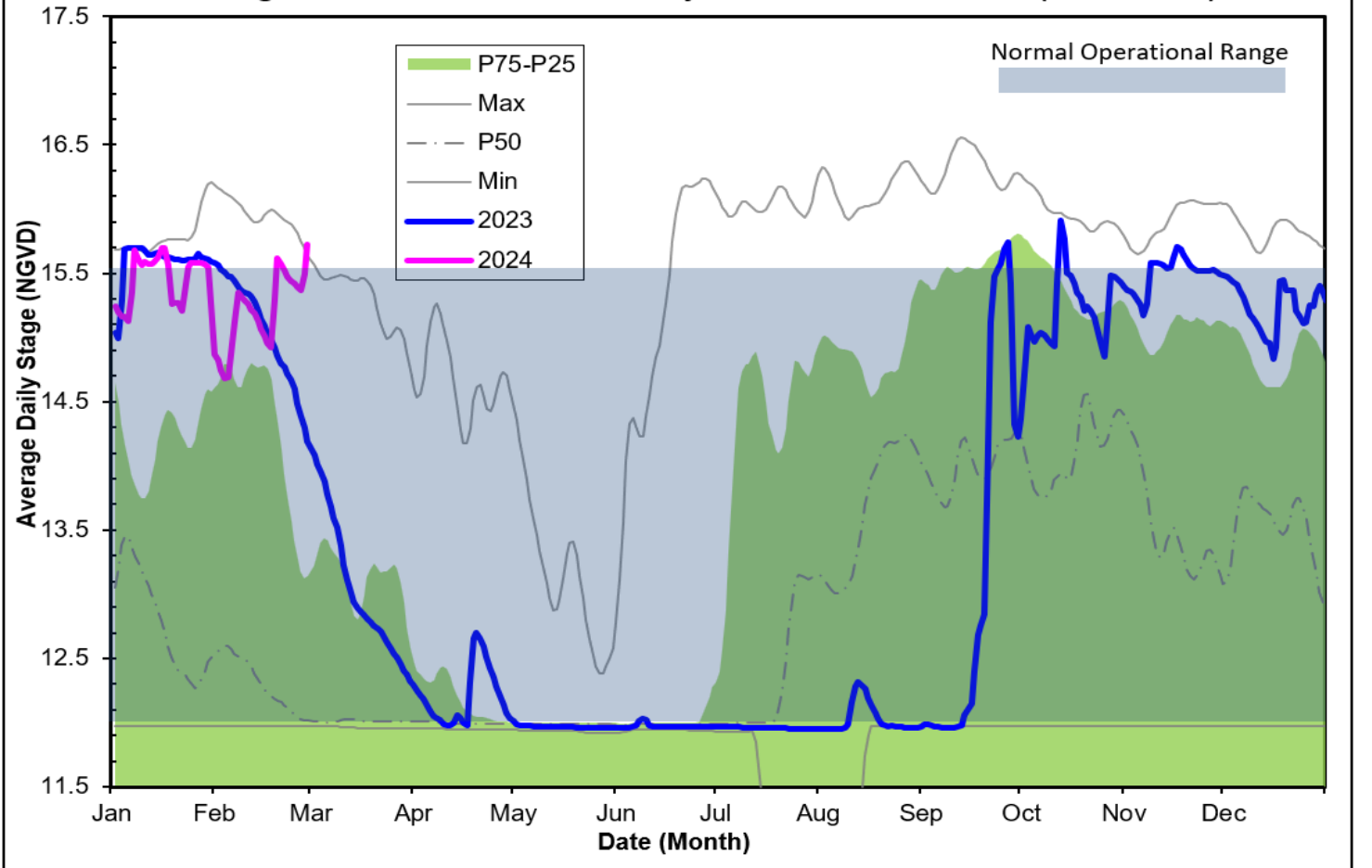


Figure 5 Golden Gate Canal Historic Average Daily Headwater Percentiles

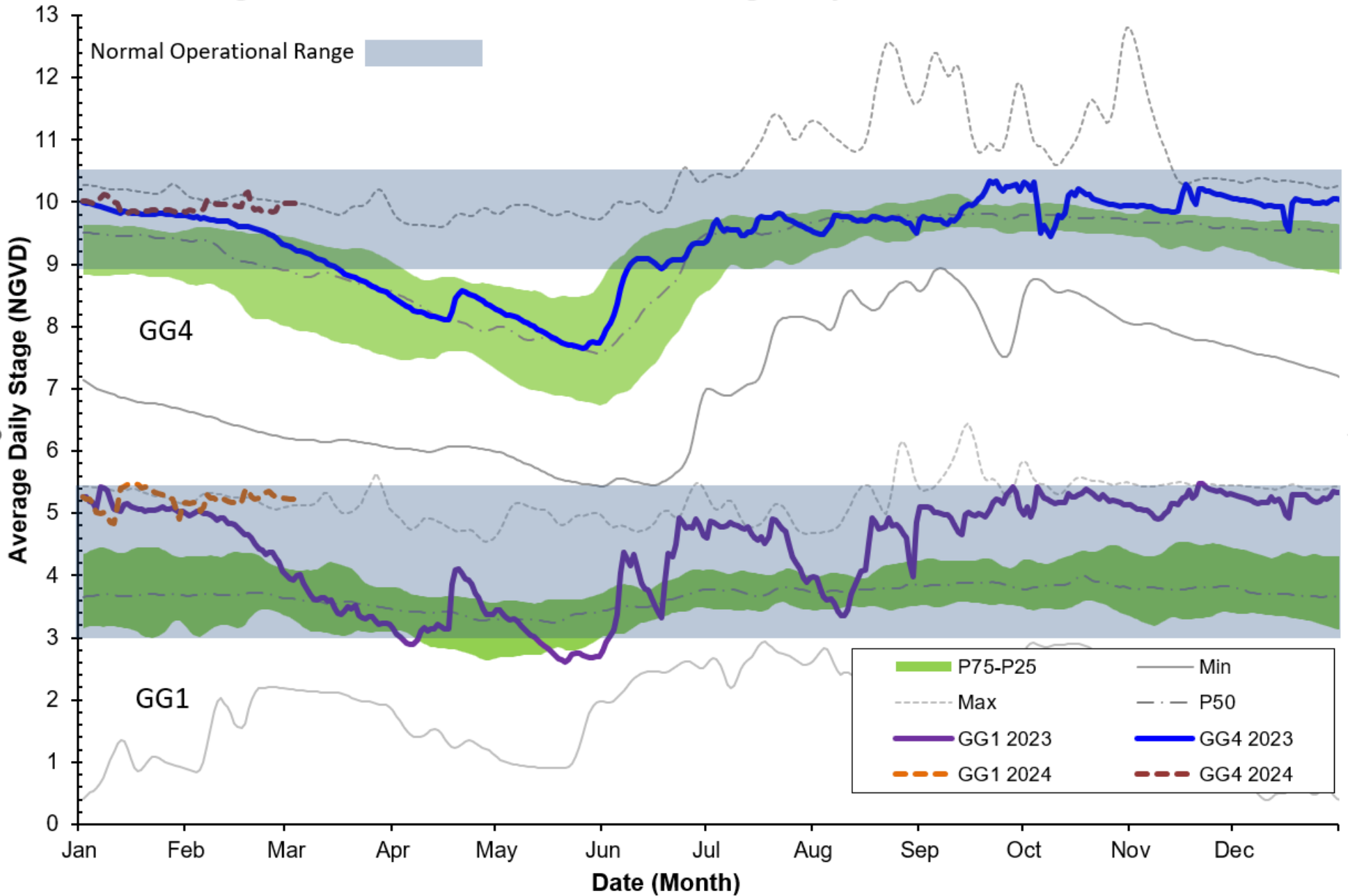


Figure 7A Faka Union Canal Historic Average Daily Headwater Percentiles

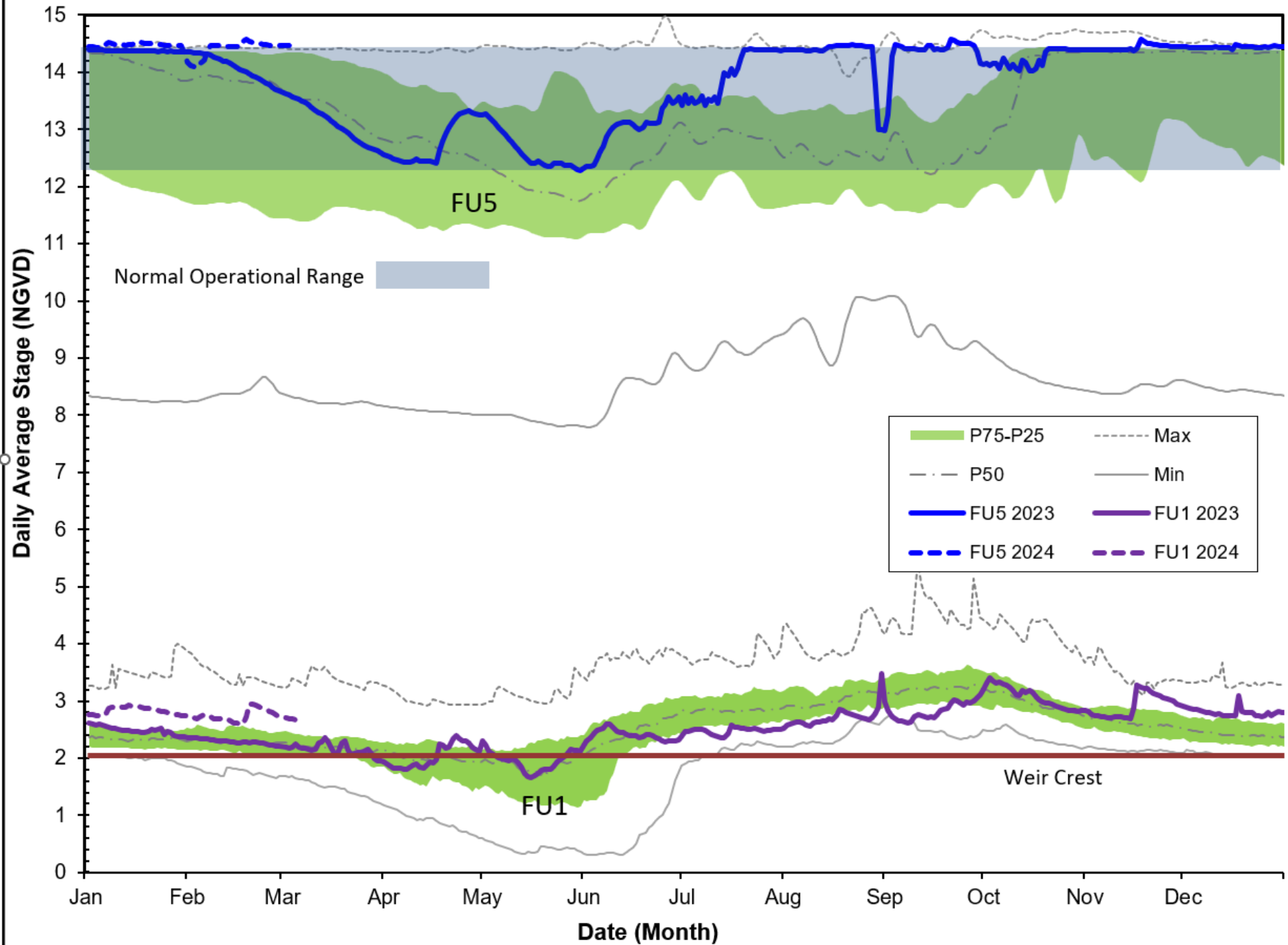


Figure 7B FU4S Historic Average Daily Water Percentiles

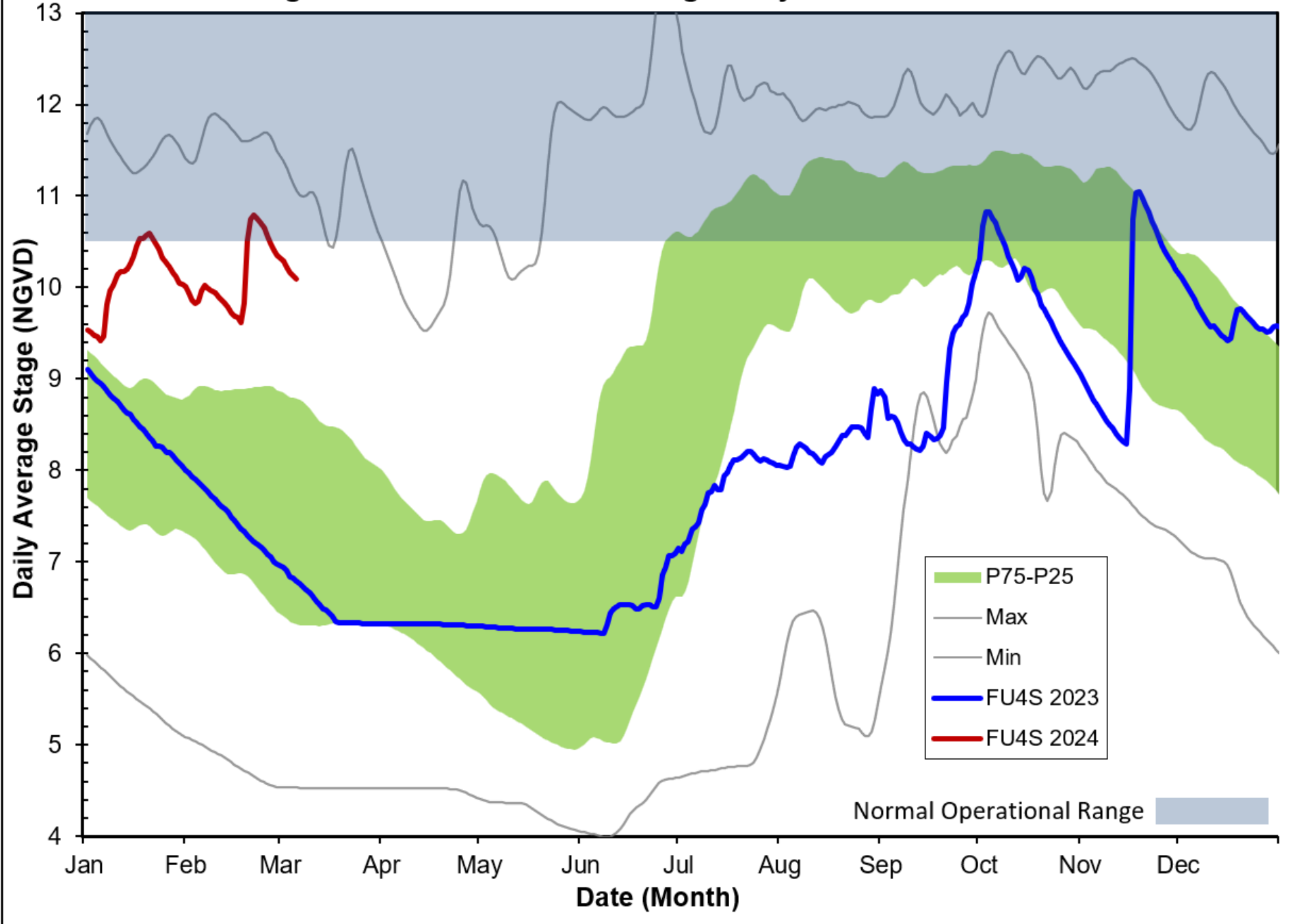


Figure 8A HC1 Historic Average Daily Headwater Percentiles

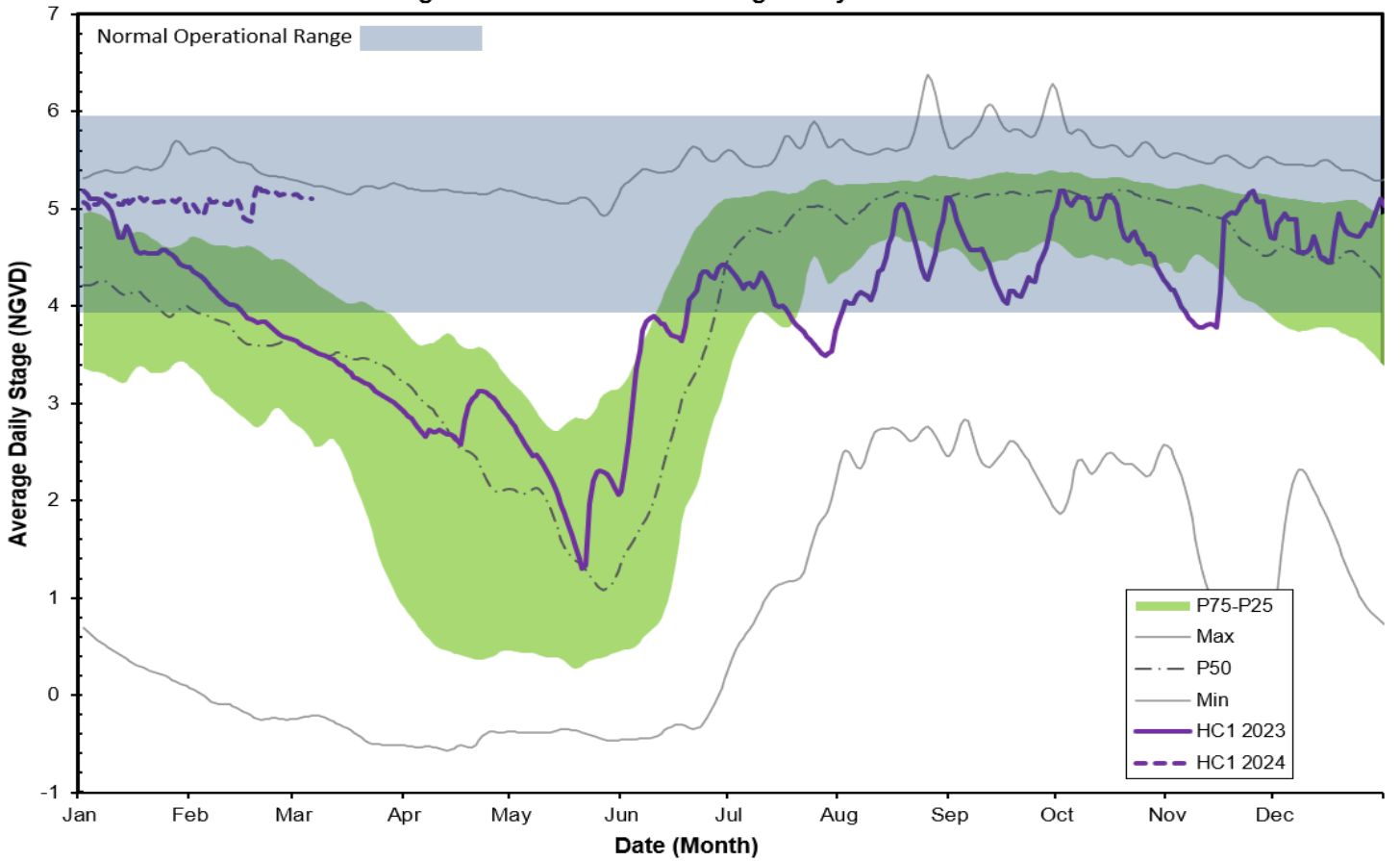
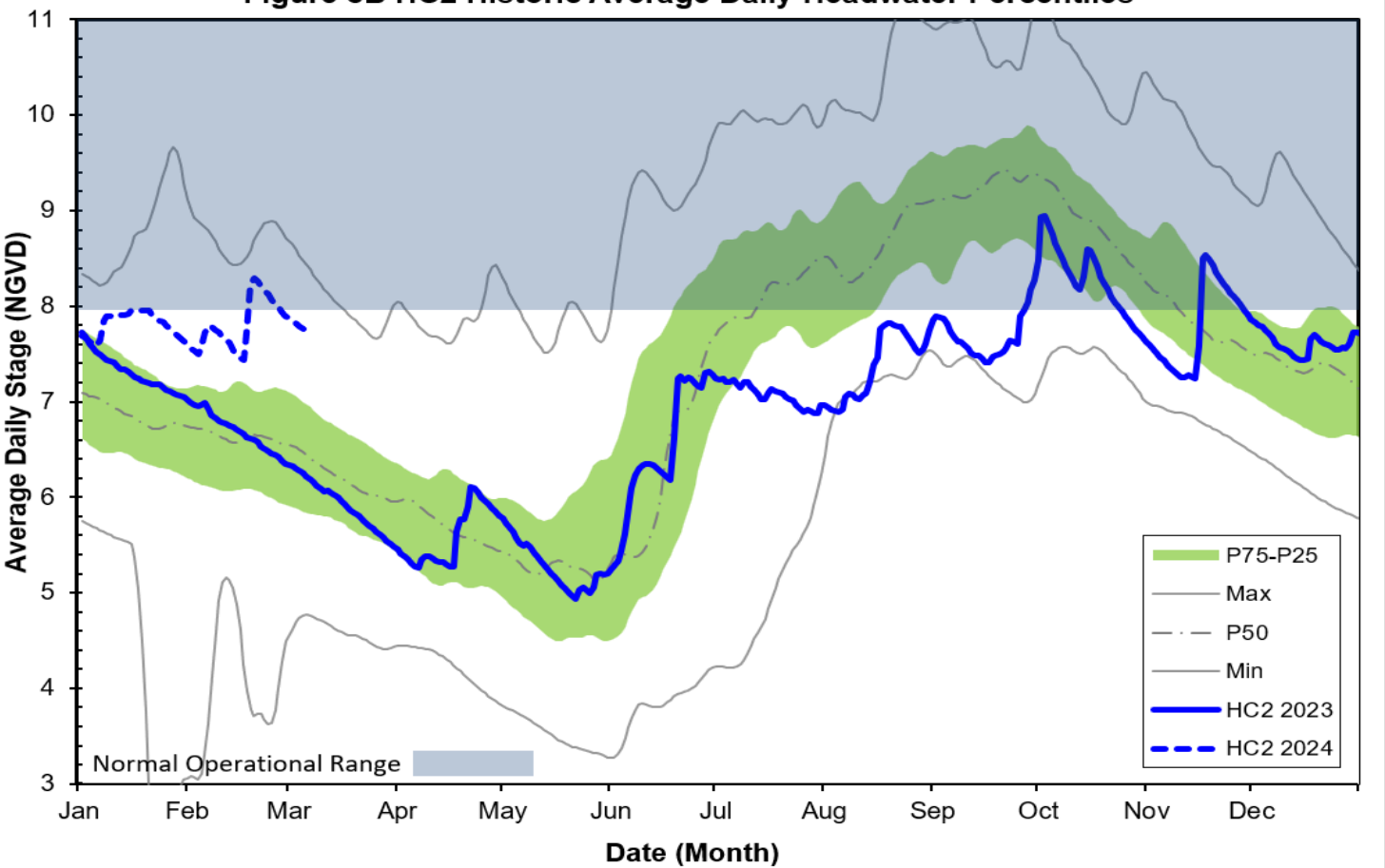


Figure 8B HC2 Historic Average Daily Headwater Percentiles



WATER CONDITIONS SUMMARY - February 2024

SELECTED STATIONS for BCB AREA / SW FLORIDA

Last Reading Date :		February 29, 2024					
Previous Period Reading Date:		December 31, 2023					
STATION INDEX NO.	WELL LOCATION	WELL / AQUIFER - TYPE	CHANGE (from previous date)	PREVIOUS LEVEL	CURRENT LEVEL (ft)	DIRECTION OF CHANGE	CONCERN INDICATOR
ALL INDICATOR LEVELS SHOWN IN FT-NGVD							
C-462	Immokalee	Lower Tamiami Aquifer	-0.03	34.32	34.29	↓	GREEN
C-1004R	Naples	Lower Tamiami Aquifer	0.07	3.30	3.37	↑	GREEN
C-1224	Marco Lakes	Lower Tamiami Aquifer	0.11	4.28	4.39	↑	GREEN
C-948R	Golden Gate	Mid Hawthorn Aquifer	2.21	28.54	30.75	↑	
C-951R	Golden Gate	Lower Tamiami Aquifer	-0.24	4.28	4.04	↓	
L-2194	Bonita Springs	Sandstone Aquifer	-0.07	5.49	5.42	↓	GREEN
L-2195	Bonita Springs	Surficial Aquifer System	0.35	10.47	10.82	↑	GREEN
L-738	Bonita Springs	Lower Tamiami Aquifer	0.14	1.58	1.72	↑	GREEN

**TABLE 2
BCB WATER CONDITIONS SUMMARY
FEBRUARY 2024**

BIG CYPRESS BASIN

JANUARY-FEBRUARY 2024

GROUNDWATER LEVEL DAILY TRENDS COMPARED TO HISTORICAL AVERAGE

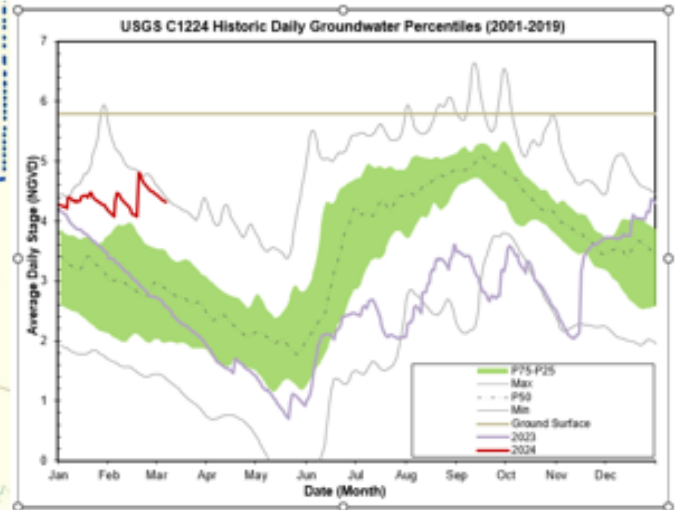
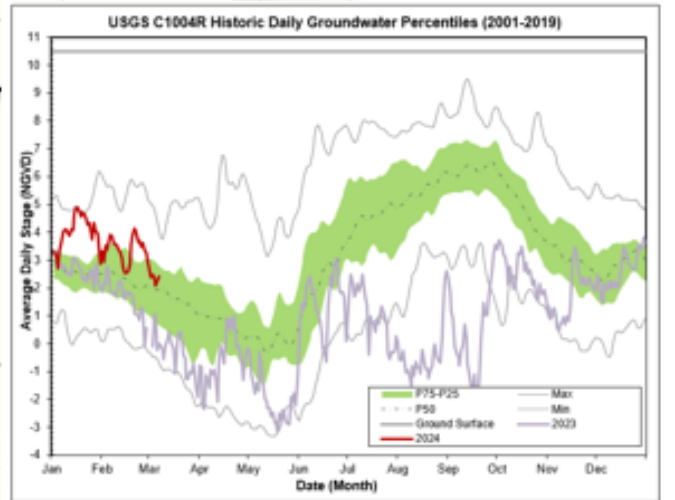
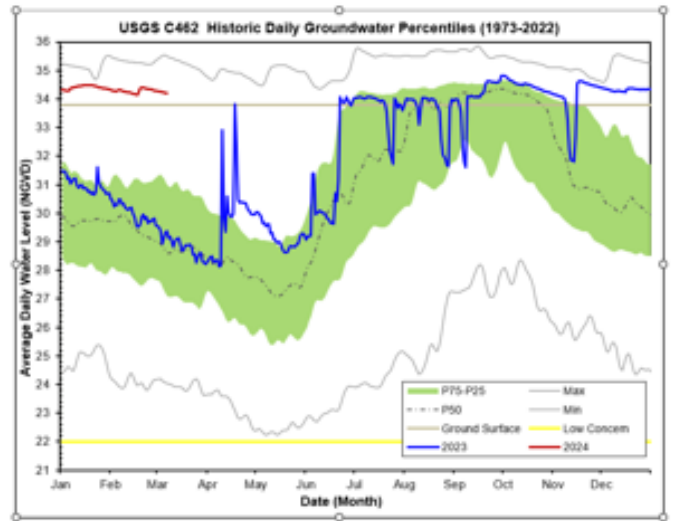
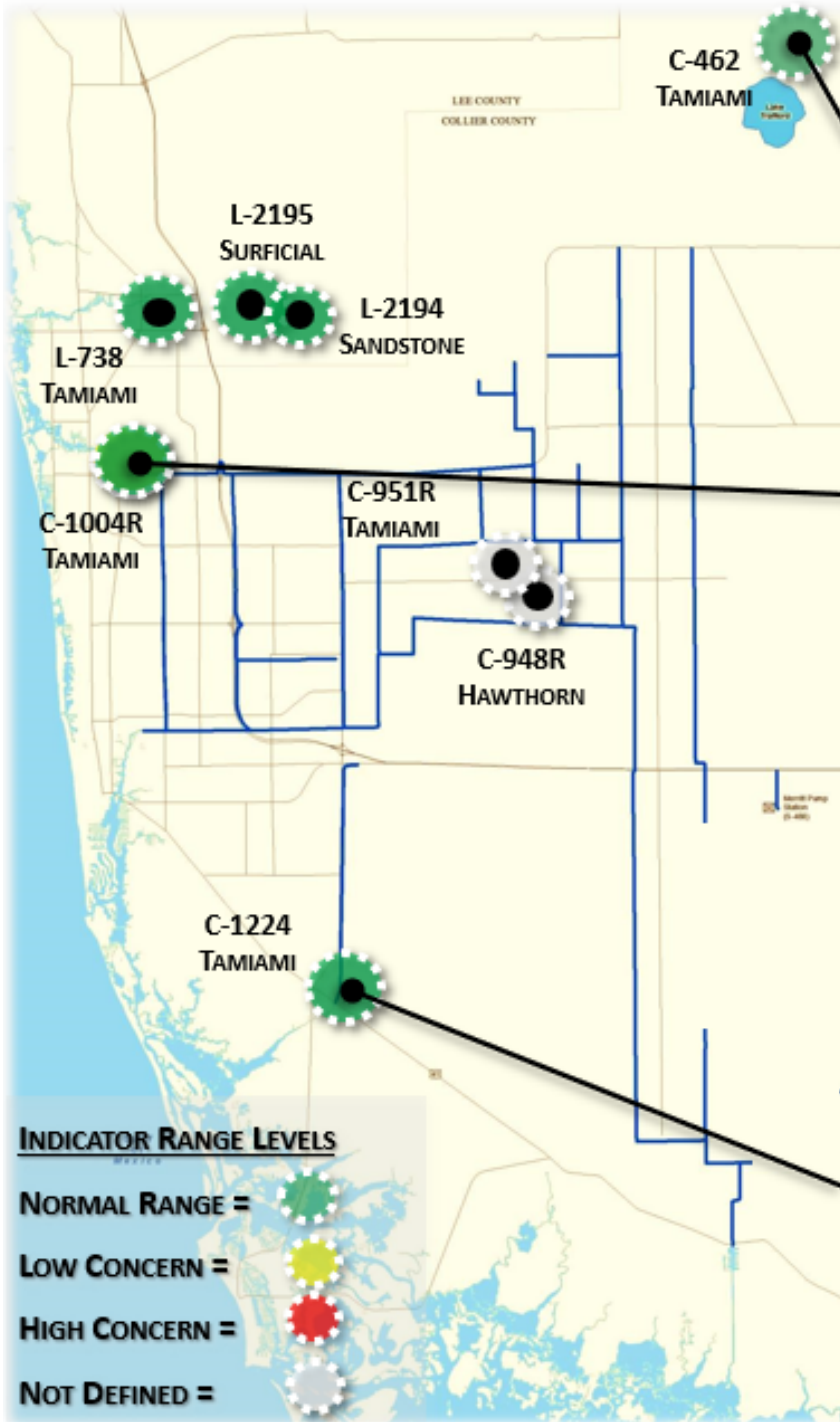


FIGURE 9

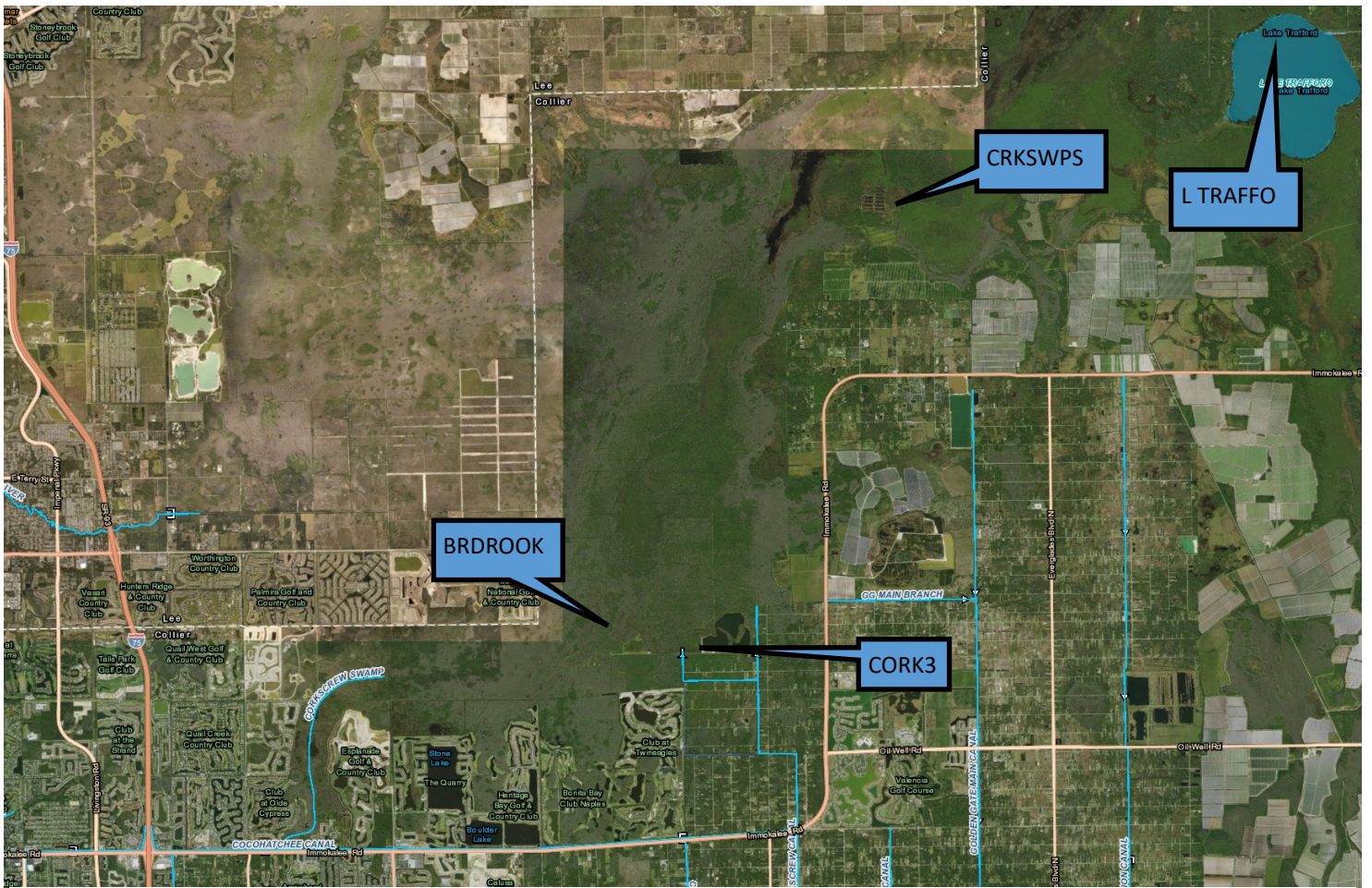


Figure 10-Corkscrew Historic Average Daily Headwater Percentiles (1984-2022)

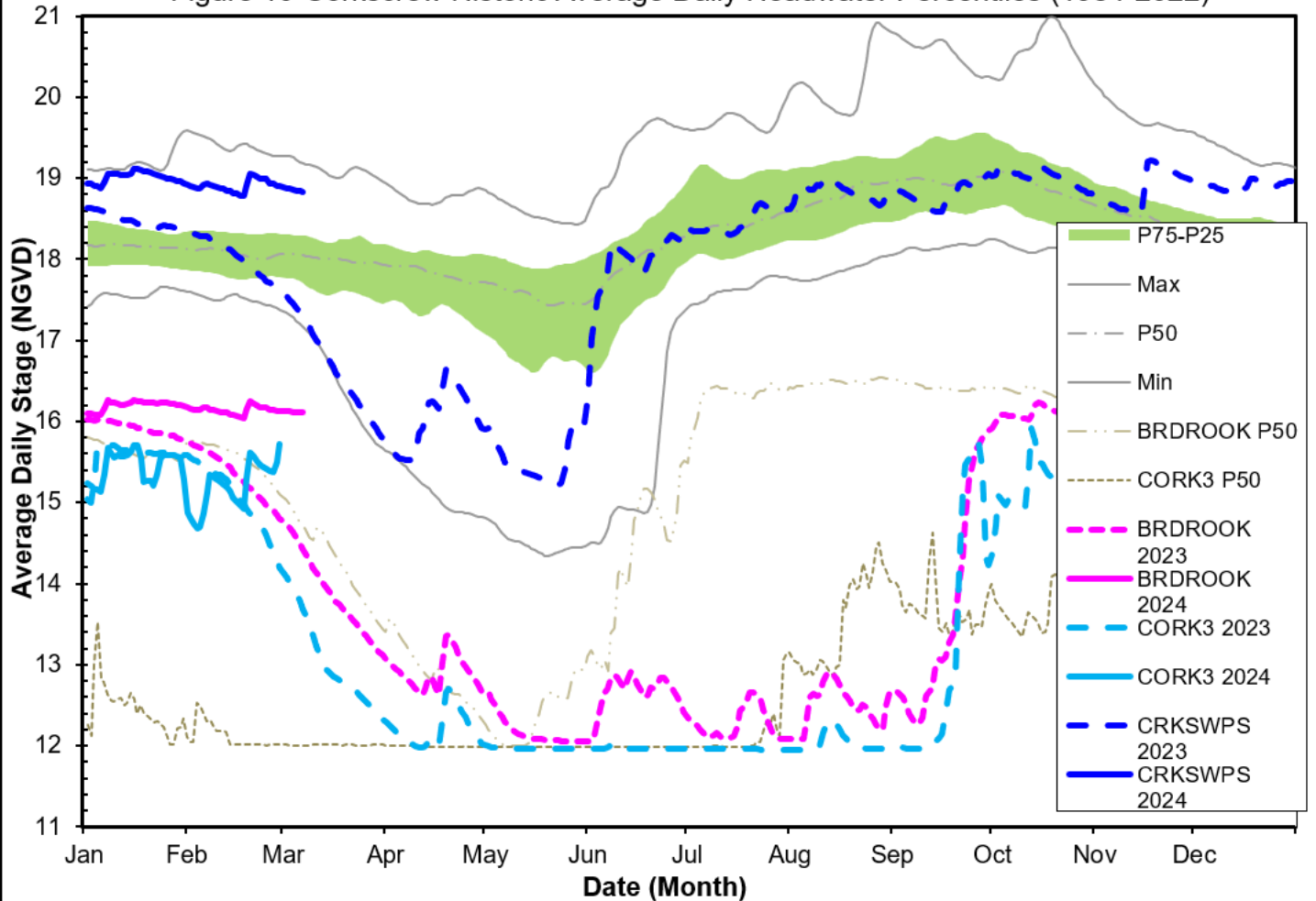
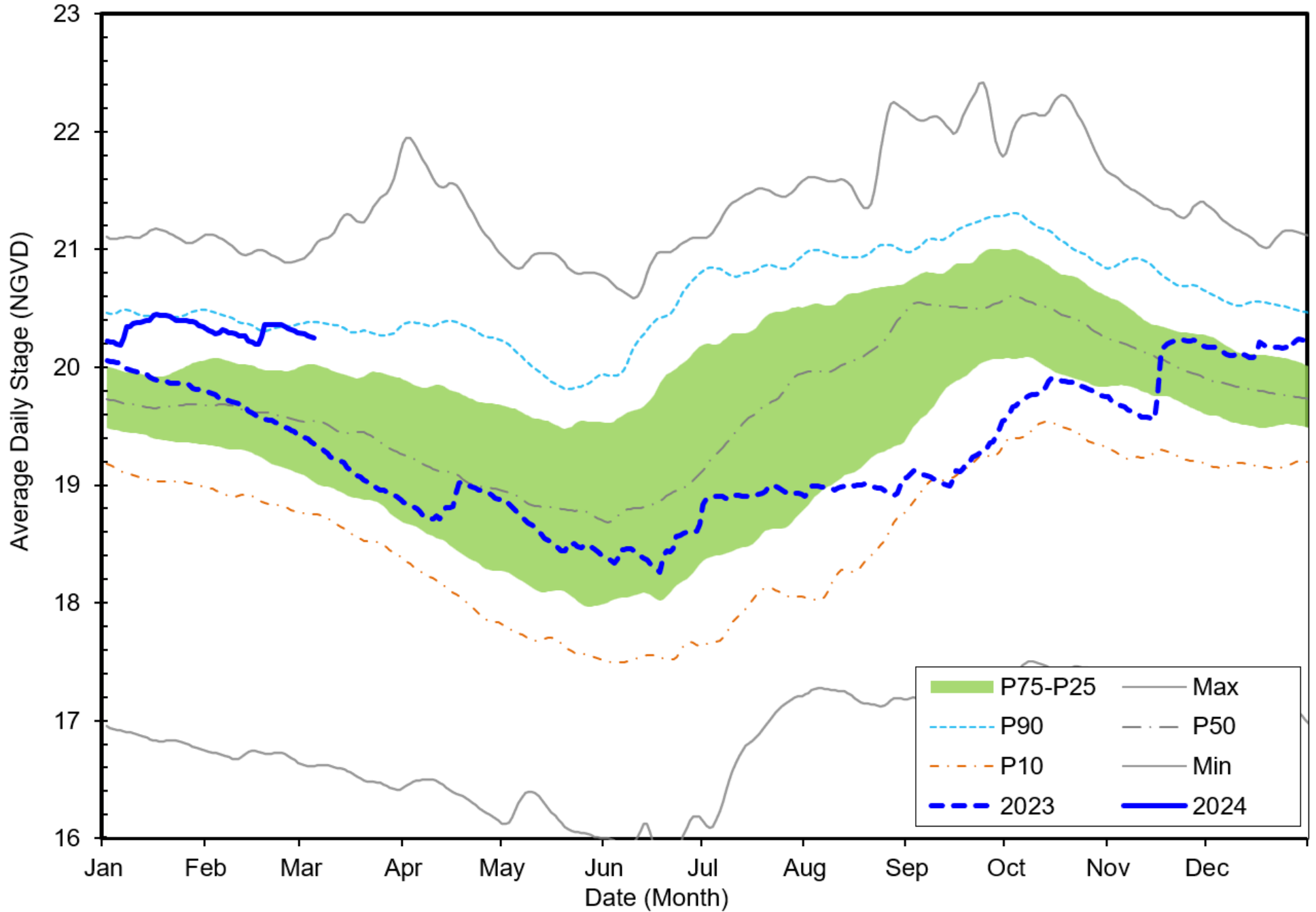


Figure 11 Lake Trafford Historic Daily Headwater Percentiles (1941 - 2022)



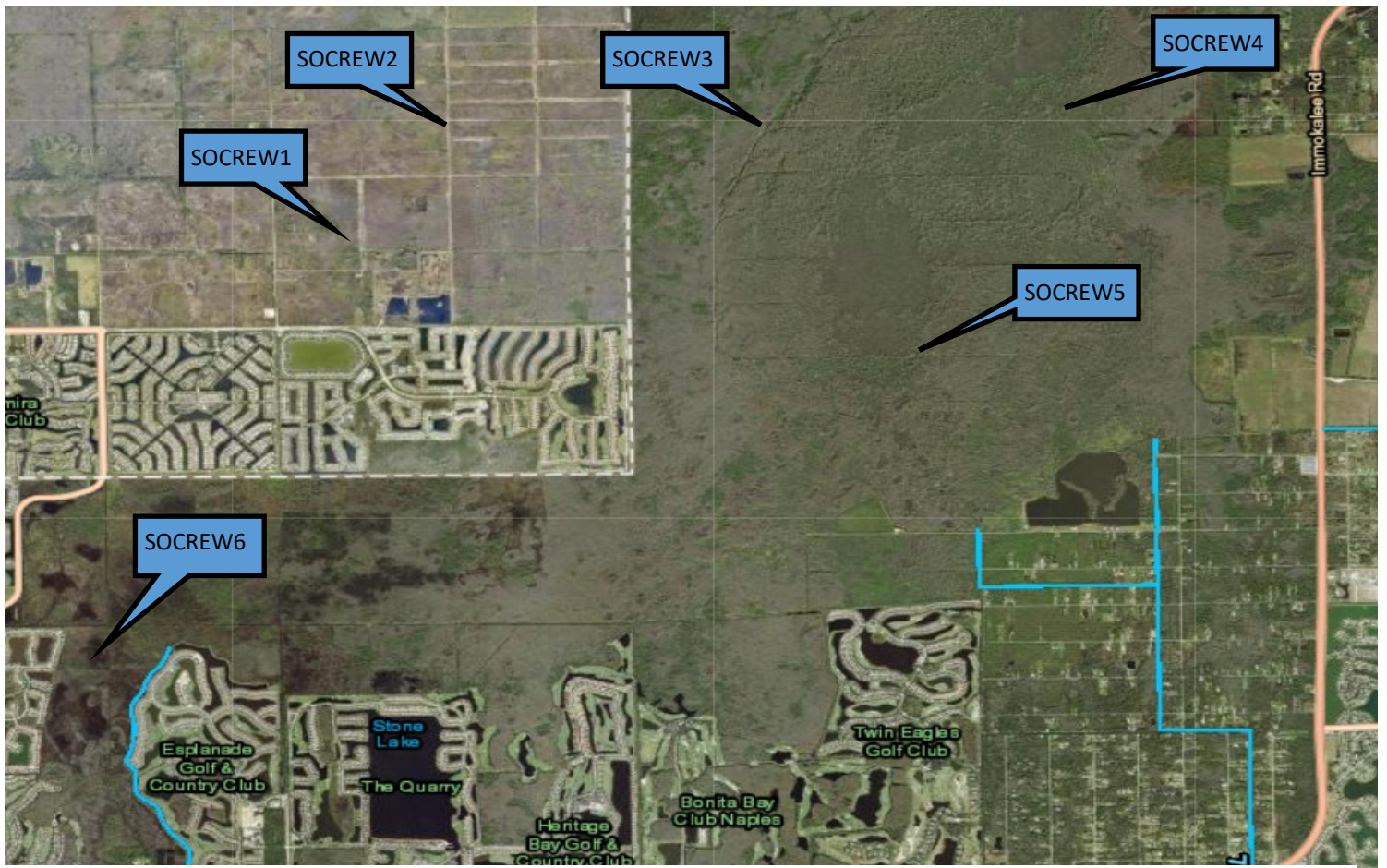
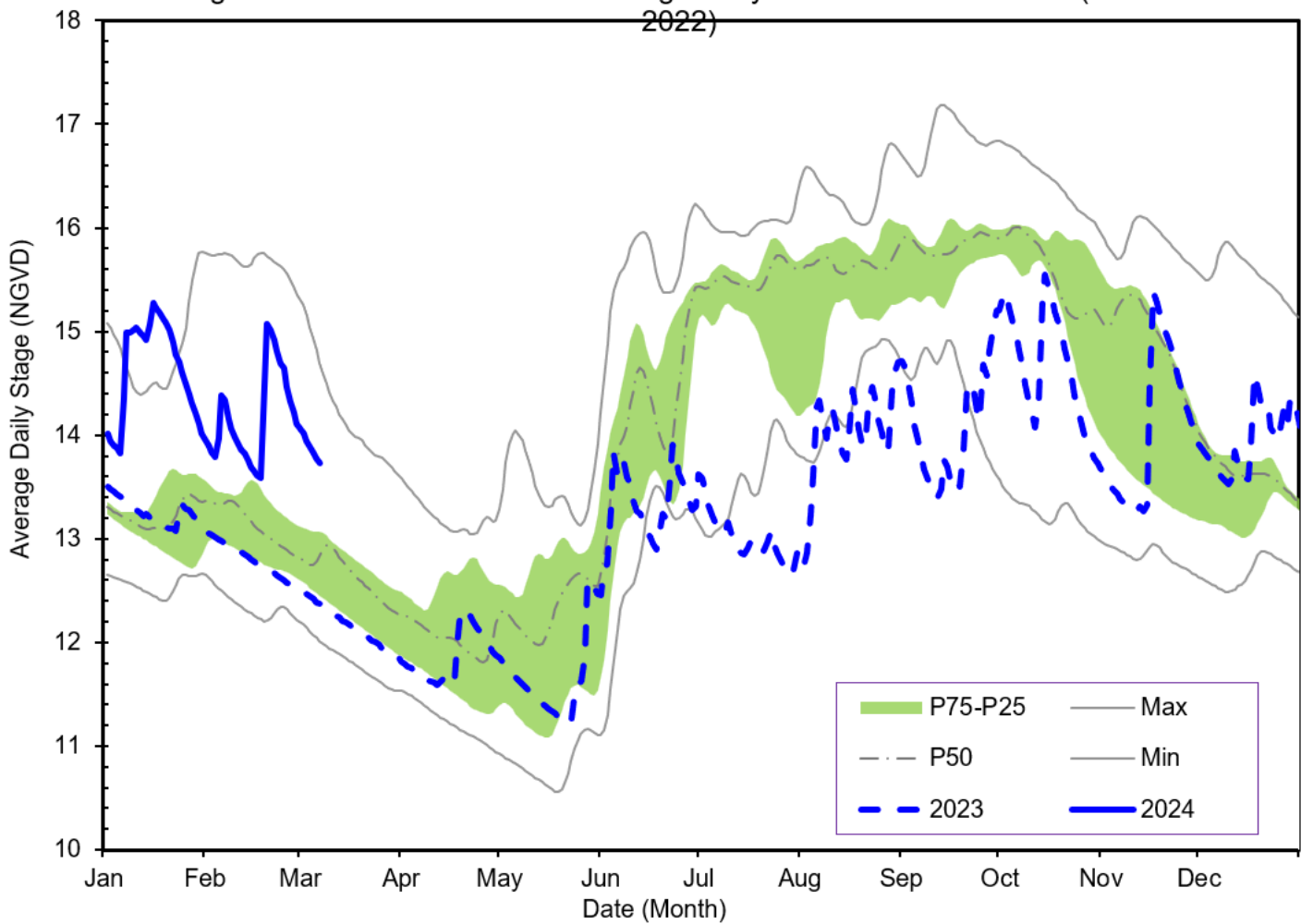


Figure 12 SOCREW1 Historic Average Daily Headwater Percentiles (2016 - 2022)



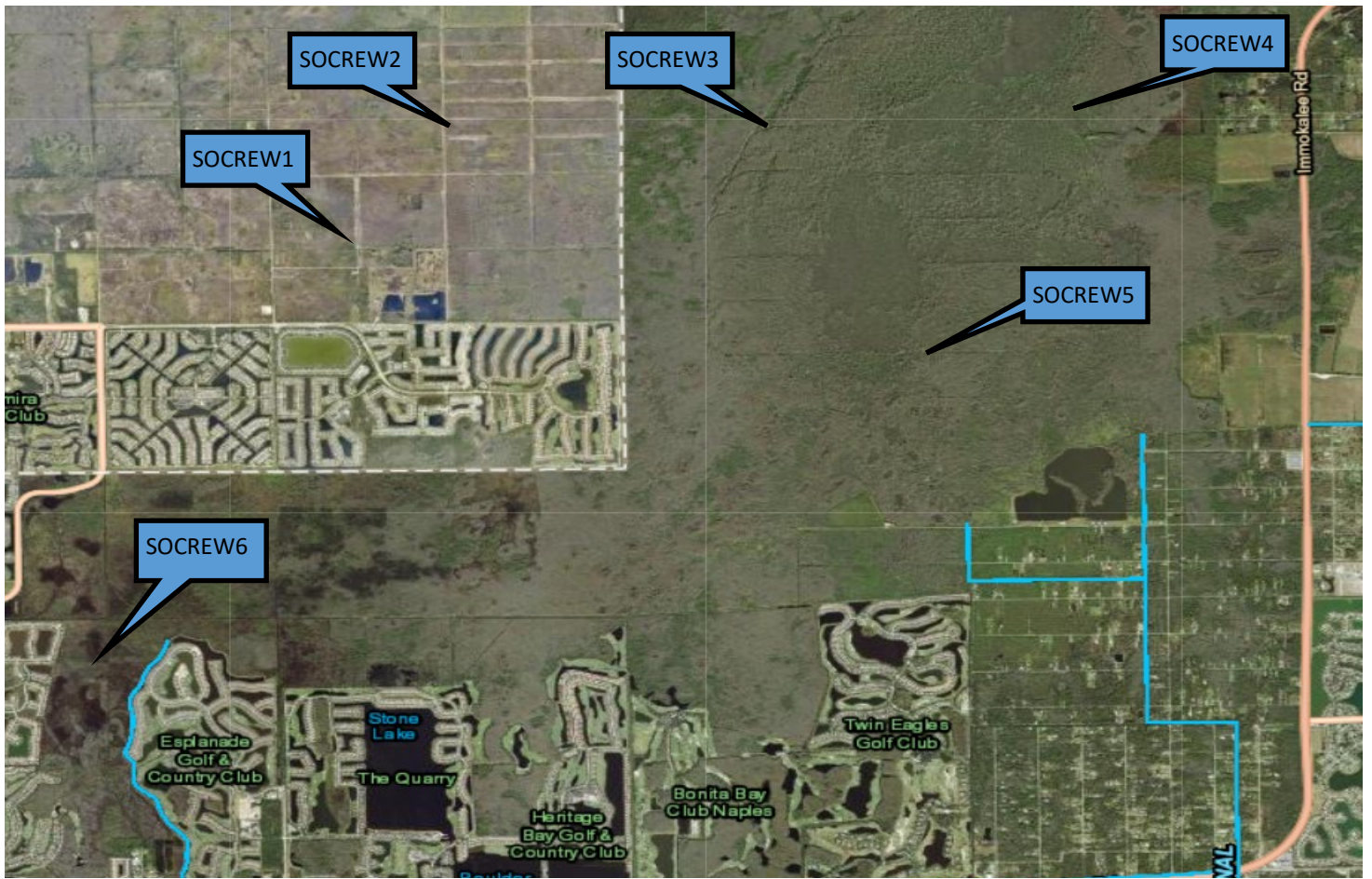


Figure 13 SOCREW2 Historic Average Daily Headwater Percentiles (2016 - 2022)

