THE COLINAS GROUP, INC.
ENGINEERING AND ENVIRONMENTAL CONSULTANTS

July 12, 2024

South Florida Water Management District
Procurement Bureau
3301 Gun Club Road
West Palm Beach, FL 33406

Attention: Mr. José L. Esquivel, CPPB, NIGP-CPP
Section Leader - Contracts

RE: Unsolicited Proposal
Proposed Mayaca Materials Facility
July 12, 2024

Dear Mr. José L. Esquivel;

On behalf of Mayaca Materials, The Colinas Group, Inc., (TCG) is pleased to submit this Unsolicited Proposal Mayaca for a Public/Private Partnership (P3) for the project with the Five Stones Quarry property to be used as a Mayaca Materials Flow Equalization Basin (FEB) for the L-8 Canal. An initial meeting concerning this proposed project was held with the District staff on July 13, 2022. Subsequently, on August 24, 2022, the District provided Preliminary Comments on the Proposed Mayaca Materials Facility. Responses to the District's comments were provided in a letter entitled Responses to Preliminary Comments on the Proposed Mayaca Materials Facility, dated June 19, 2023, addressed to Ms. Jennifer Reynolds, Division Director, Ecosystem Restoration, Mr. Joe Oterio, P.E. Section Administrator, Everglades and Local Projects, and Ms. Jennifer Leeds, Section Administrator, Everglades Policy and Coordination Division. A copy of the letter providing details of the proposed P3 is attached.

On August 23, 2023, a meeting was held with the District staff to present the proposal, answer questions, and identify the path forward. A copy of the presentation to the District staff is attached. The staff informed us that the District was in the process of preparing guidance for a P3 proposal. We were notified by you on June 28, 2024 that the procurement procedures for an unsolicited proposal had been established. We reviewed the guidance for Submitting an Unsolicited Proposal to the South Florida Water Management District, effective July 1, 2024. This letter is being submitted along with the attachments as Mayaca Materials Unsolicited Proposal for a P3 for the project with the Five Stones Quarry property to be used as a Mayaca Materials Flow Equalization Basin (FEB) for the L-8 Canal.

The guidance for Submitting an Unsolicited Proposal to the South Florida Water Management

District requires that the project meets the definition of a Qualifying Project under Section 255.065(1)(i), Florida Statutes. Under that Statute, "Qualifying project" means:

1. **A facility or project that serves a public purpose**, including, but not limited to, any ferry or mass transit facility, vehicle parking facility, airport or seaport facility, rail facility or project, fuel supply facility, oil or gas pipeline, medical or nursing care facility, recreational facility, sporting or cultural facility, or educational facility or other building or facility that is used or will be used by a public educational institution, **or any other public facility or infrastructure that is used or will be used by the public at large or in support of an accepted public purpose or activity;**
2. An improvement, including equipment, of a building that will be principally used by a public entity or the public at large or that supports a service delivery system in the public sector;
3. A water, wastewater, or **surface water management facility** or other related infrastructure; or,
4. Notwithstanding any provision of this section, for **projects that involve a facility owned or operated by the governing board of a county, district**, or municipal hospital or health care system, or projects that involve a facility owned or operated by a municipal electric utility, only those projects that the governing board designates as qualifying projects pursuant to this section.

The proposed project is:

- a facility or project that serves a public purpose as it will be a public facility or infrastructure that is used or will be used by the public at large or in support of an accepted public purpose or activity;
- a water, wastewater, or surface water management facility or other related infrastructure; and,
- is proposed as a project that involves a facility owned or operated by the governing board of the District.

Therefore, we consider the proposed P3 to be a "Qualifying project" and request the District to move forward with evaluating the Unsolicited Proposal.

As specified in the guidelines, a check for $1,000 Initial Application Fee is enclosed.

* * * *

Thank you for the opportunity to submit this unsolicited proposal concerning the Mayaca Materials facility. We look forward to meeting with you in the near future and continuing to move forward on the proposed project. If you have comments/questions concerning the information presented herein, please contact me.

Yours very truly,
The Colinas Group, Inc.
Engineering and Environmental Consultants

Mark R. Stephens, P.G., P.E.
Principal Consultant / President

Attachments

1 original and 1 USB electronic submittal

cc: Ms. Jennifer Reynolds, Division Director, Ecosystem Restoration
Mr. Joe Oterio, P.E. Section Administrator, Everglades and Local Projects
Ms. Jennifer Leeds, Section Administrator, Everglades Policy and Coordination Division
Mr. Michael Rendina - Mayaca Materials
Mr. Jeff Attwater - Ballard Partners
Ms. Kerri Barsh - Greenberg Traurig, LLP.

Responses to Preliminary Comments on the Proposed Mayaca Materials Facility, dated June 19, 2023

2031 E. Edgewood Drive, Suite 5, Lakeland, FL 33803-3601 • (863) 669-9141 • Fax: (863) 669-1742

THE COLINAS GROUP, INC.
ENGINEERING AND ENVIRONMENTAL CONSULTANTS

June 19, 2023

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

Attention: Ms. Jennifer Reynolds, Division Director, Ecosystem Restoration
Mr. Joe Oterio, P.E. Section Administrator, Everglades and Local Projects
Ms. Jennifer Leeds, Section Administrator, Everglades Policy and Coordination Division

RE: Responses to Preliminary Comments on the Proposed Mayaca Materials Facility
August 24, 2022

Ladies and Gentleman;

Thank you for meeting with us on July 13, 2022 concerning the proposed Mayaca Materials facility. On August 24, 2022, you provided Preliminary Comments on the Proposed Mayaca Materials Facility. In your comment, you stated the following. "*In general, the proposal for a water facility at the Mayaca Materials site has the potential for reduction of nutrients (particularly phosphorus) in the water discharged from Lake Okeechobee, via the L-8 Canal, to downstream destinations; or in the water discharged from the L-8 Canal into Lake Okeechobee. Reduction of nutrients into Lake Okeechobee helps the health of the lake, reduces the opportunities for harmful algal blooms, and improves the water quality of lake releases into receiving water bodies. The proposal would benefit from analysis, details, and clarification related to the items covered below, which should help the consultant get a proposal ready for a formal review by the District*." The analysis, details, and clarification you requested are provided in this letter. The additional information requested is reiterated below (**in bold**) followed by our responses.

Project Summary

Mayaca Materials currently operates contiguous two limerock quarries (Gilbert Quarry and Five Stones Quarry) in Palm Beach County at the location shown in Sheet 2. The Five Stones Quarry is the subject of this proposal. Mining of the Gilbert Quarry is nearly complete and will not be part of the proposal. The Mayaca Materials Five Stones Quarry is being planned for mining +/- 460.9 acres, as shown on the Conceptual Mine Plan (Sheet 6) within the L-8 Drainage Basin. The +/- 460.9 acres comprise Phase I of the proposed project. The quarry is to be mined to an elevation of approximately -13.7 feet NAVD 88 (depth of approximately 26 feet) which will allow for a water storage capacity of approximately +/- 11,200 acre-feet. The quarry is strategically located adjacent to the L-8 Canal as shown on Sheet 6 and is partially within the Everglades Agricultural Area (EAA).

The second phase of the proposed project will be acquiring an additional +/-1290 acres for mining as shown on Figure 1. Assuming approximately 70 percent of the acreage can be mined, Phase 2 adds an additional +/- 900 acres for the proposed project. Phase 2 is anticipated to be mined to a depth of approximately 26 feet which will allow for an additional water storage capacity of approximately +/- 22,400 acre-feet. The overall project at build-out will allow for a total of approximately 33,600 acre-feet of water storage capacity.

The proposed project lies within the Lake Okeechobee Statewide BMAP General Area adopted January 10, 2013. Total Maximum Daily Loads (TMDLs) have been not yet been adopted for the L-8 basin.

Mayaca Materials is proposing a Public/Private Partnership (P3) for the project with the quarry property to be used as a Mayaca Materials Flow Equalization Basin (FEB) for the L-8 Canal. The proposed FEB's maximum operational pool stage is planned to be approximately 13 feet NAVD 88. The conceptual reclamation plan for the Five Stones Quarry is shown on Sheet 19. The project will include two cells separated by the Florida Power & Light Right-of-Way (ROW). The two cells will be interconnected using culverts to be installed through the ROW to provide a combined water storage capacity. When the flow in the L-8 Canal is from Lake Okeechobee, water from the L-8 Canal west of Structure S-76 (a gated spillway) can be moved into the FEB at the southwest corner of the FEB, then flow into the two cells, finally discharging back into the L-8 Canal on the east side, downgradient side, of Structure S-76. When the gated Structure S-76 is closed, the water level in the L-8 Canal will be higher on the west side of the gate allowing water to be moved into the FEB from the southwest corner, then discharge downstream of Structure S-76 back into the L-8 Canal.

As discussed below, when flow in the L-8 Canal is toward Lake Okeechobee, the FEB will also function for that flow condition. When the gated Structure S-76 is closed and the water level east of the structure is higher, water from the L-8 Canal east of Structure S-76 can be moved into the FEB at the southeast corner of the FEB, then flow through the two cells, finally discharging back into the L-8 Canal, via gravity flow, on the west side, a downgradient side, of Structure S-76

The proposed project will be similar to the L-8 Flow Equalization Basin (FEB) further south along the L-8 Canal. The L-8 was completed July 2017 and is one of a suite of projects in the State of Florida's Restoration Strategies plan to improve water quality in the Everglades. The proposed Mayaca Materials deep-storage reservoir will function as a multipurpose FEB to capture, store and deliver water to downstream STAs.

The proposed project will also have similarities with the C-51 Reservoir project on the Palm Beach Aggregates property. The C-51 Reservoir P3 project facilitates the development of the C-51 Reservoir as an alternative water supply project for South Florida. The Mayaca Materials FEB project would secondarily function as a water supply project but would primarily function as a FEB for discharges from Lake Okeechobee to the L-8 Canal, and visa versa.

With the exception of the ability to handle flow bi-directional flow in the L-8 Canal, the proposed project is similar to others deployed successfully elsewhere. The L-8 FEB and C-51 Reservoir projects have been previously permitted in the state of Florida. These facilities were required to obtain an Environmental Resource Permit (ERP), Everglades Forever Act (EFA) permit, a Consumptive Use Permit (CUP), and a National Pollution Discharge Elimination System (NPDES) permit. The proposed project will require these permits and authorizations as well as mining related permits from Palm Beach County.

The parties involved in the P3 are anticipated to be FDEP, SFWMD, Palm Beach County, and Mayaca Materials until completion of construction. The project can be transferred to a new pubic entity and perhaps placed into a Conservation Easement in phases (for example at the end of each Phase I and Phase II) or at the end of build-out of the entire project.

The P3 envisioned for the Mayaca Materials proposed project includes the following:

- Mayaca Materials, in conjunction with SFWMD, will assist in designing and permitting the project, assist in financing construction, construct and deliver the completed facility in pre-determined phases.
- The Mayaca Materials property would be deeded over to the State or a Not-for-Profit entity who would own the FEB upon completion.
- SFWMD would operate and maintain the FEB and provide for the conveyance systems to and from the FEB from the L-8 Canal.

Located in northern Palm Beach County, Phase 1 of the project will be built on a strategically located +/-460.9 acre quarry adjacent to the L-8 Canal. The geologic conditions of the property allows for deep, below-ground storage which reduces water loss from seepage and evapotranspiration, and minimizes levee safety concerns.

Surficial aquifer ground water in the vicinity of the Mayaca Materials property contains elevated chloride concentrations, not related to the mining operations. A report published by the US Geological Survey "*Changes in the saltwater interface corresponding to the installation of a seepage barrier near Lake Okeechobee, Florida*" (USGS Open-File Report 2014-1256), noted changes in the depth to the saltwater interface in the area. An important, but secondary benefit of the FEB on the Mayaca Materials property would be to increase the hydraulic head in the surficial aquifer. As discussed below, the increased head resulting in seepage of retained L-8 canal water into the surficial aquifer would tend to cause the saltwater interface to move downward and outward from the cells..

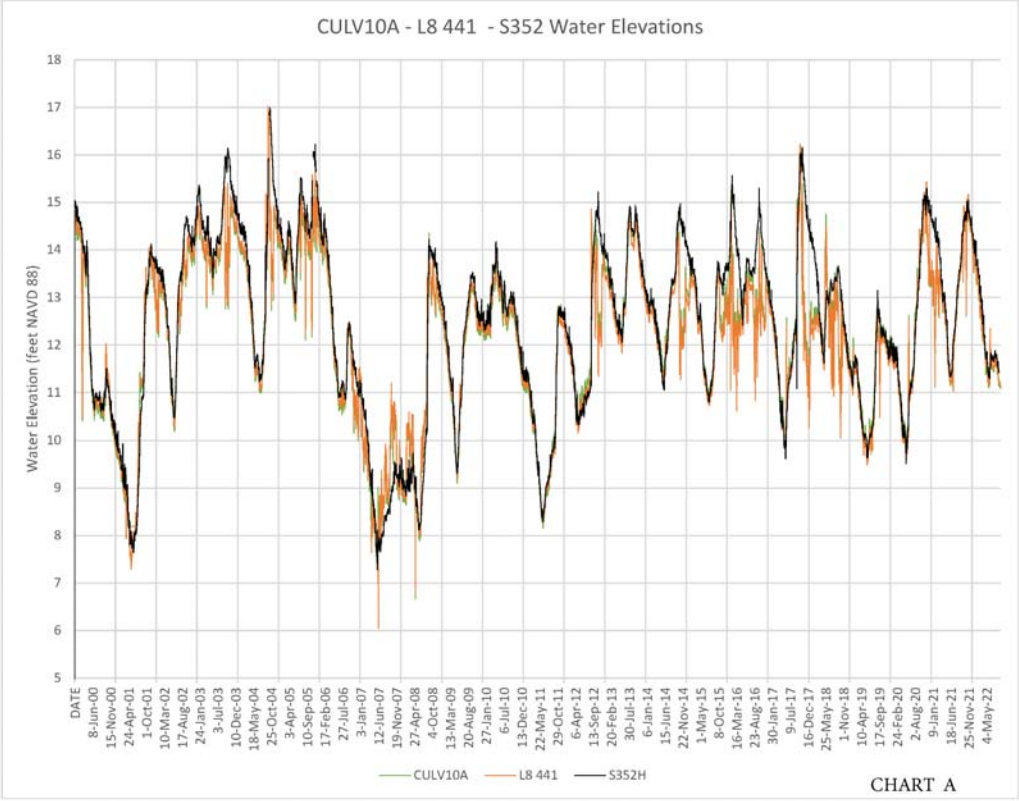
Water quality monitoring stations will be established at the intake and discharge end of the FEB. One aspect of success of the proposed project will be measured by monitoring total nitrogen and total phosphorous reductions in the discharge from the FEB.

Hydraulics

It is recommended to quantify the range of stage differences, or head, between the flow-way inflow and outflow, and the corresponding range of flows. This would require a hydraulic analysis of the long-term observed data available in DBHYDRO. Flow estimates through the L-8 Canal are available at station L8.441 (a USGS stage and flow station). Data representative of Lake Okeechobee stage near the outflow structure S-271 for the L-8 Canal, is available at S-352 headwater (S352_H). Analysis should consider the observed head across the S-271 lake outlet/inlet structure at the terminus of the L-8 Canal, and its corresponding flow. It should also consider the required head between the inflow and outflow of the Mayaca Materials facility. The result of this analysis would estimate the total head between the east side of the s-76 structure (L-8 Canal gate structure) and the lake stage, plus the corresponding flow. Annual summaries of the results from this analysis, compared to the historical record, would be important information to assess the hydraulic feasibility of the proposed facility, and particularly the impact of the increased head necessary to achieve required flows across the Mayaca Materials facility.

Range of stage differences

- L-8, CULV10A, and Structure 352_H stage analyses are presented in Chart A.

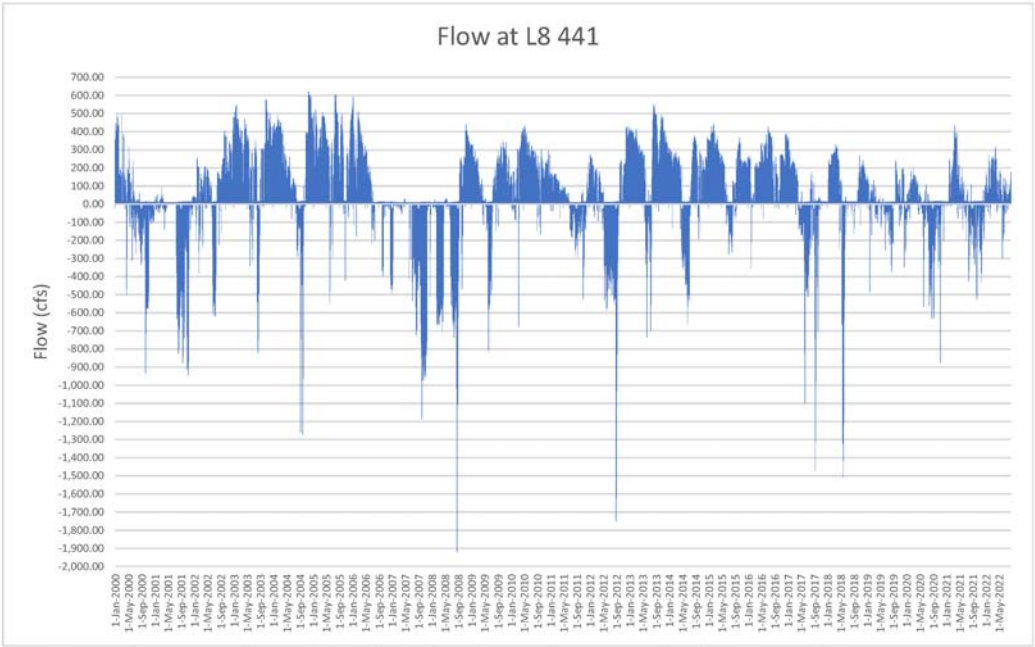


- The average, maximum, minimum, and median stages for the period of record analyzed (January 2000 through August 2022) are:

	CULV10A	L8 441	S352H
Average	12.17	12.16	12.46
Maximum	16.79	17.02	16.99
Minimum	6.67	6.05	7.28
Median	12.42	12.35	12.71

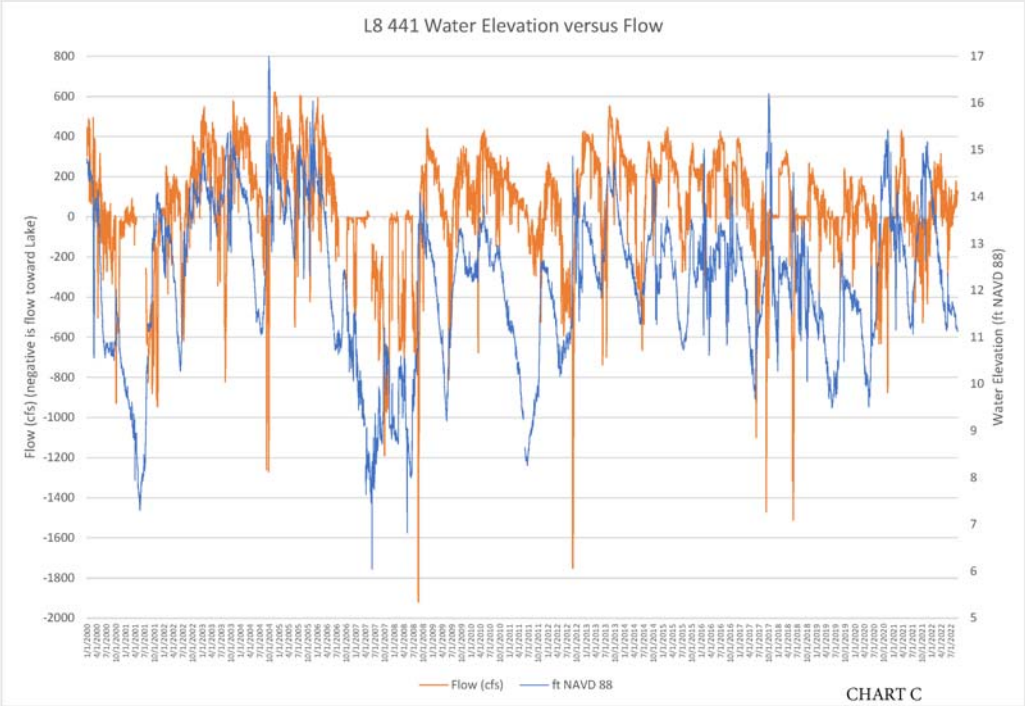
Range of Flows

- The L-8 canal flow estimates were analyzed using station L-8 and the range of flows are presented in Chart B. Negative flows represent flow toward Lake Okeechobee and positive flows represent flow from Lake Okeechobee.



Negative flows represent flow toward Lake Okeechobee and positive flows represent flow from Lake Okeechobee CHART B

- L-8 flow versus stage is presented on Chart C.



Negative flows represent flow toward Lake Okeechobee and positive flows represent flow from Lake Okeechobee

- The average, maximum, minimum, and median flows in the L-8 canal for the period of record analyzed (January 2000 through September 2022) are:

	FLOW (cfs)
Average	49
Maximum	622
Minimum	-1920
Median	74

- Annual summary and quarterly summary of L-8 Canal flows are shown on Charts D and E below.

CHART D

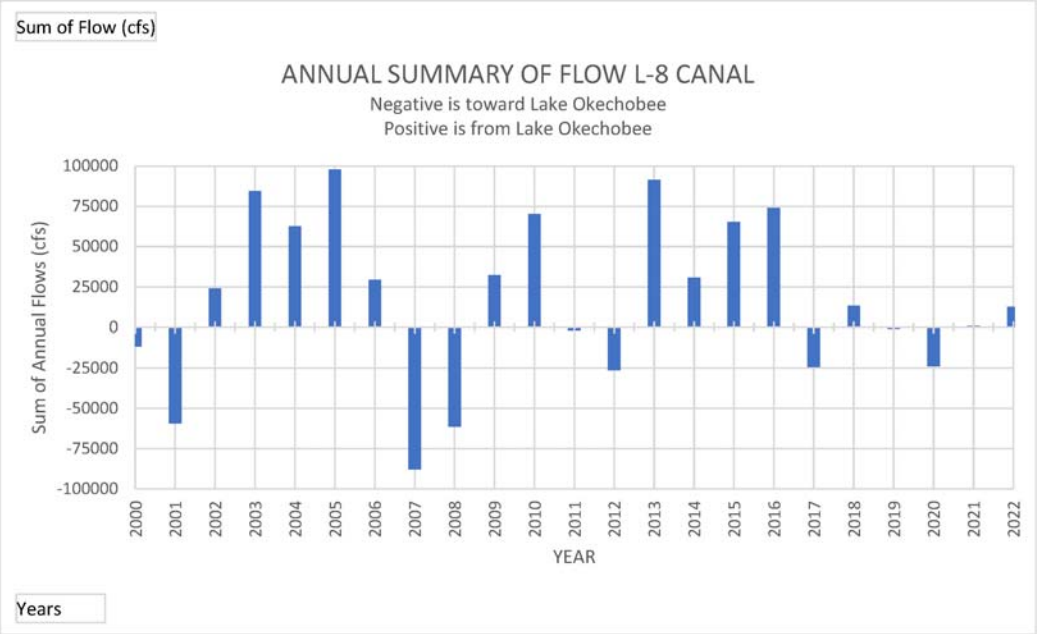
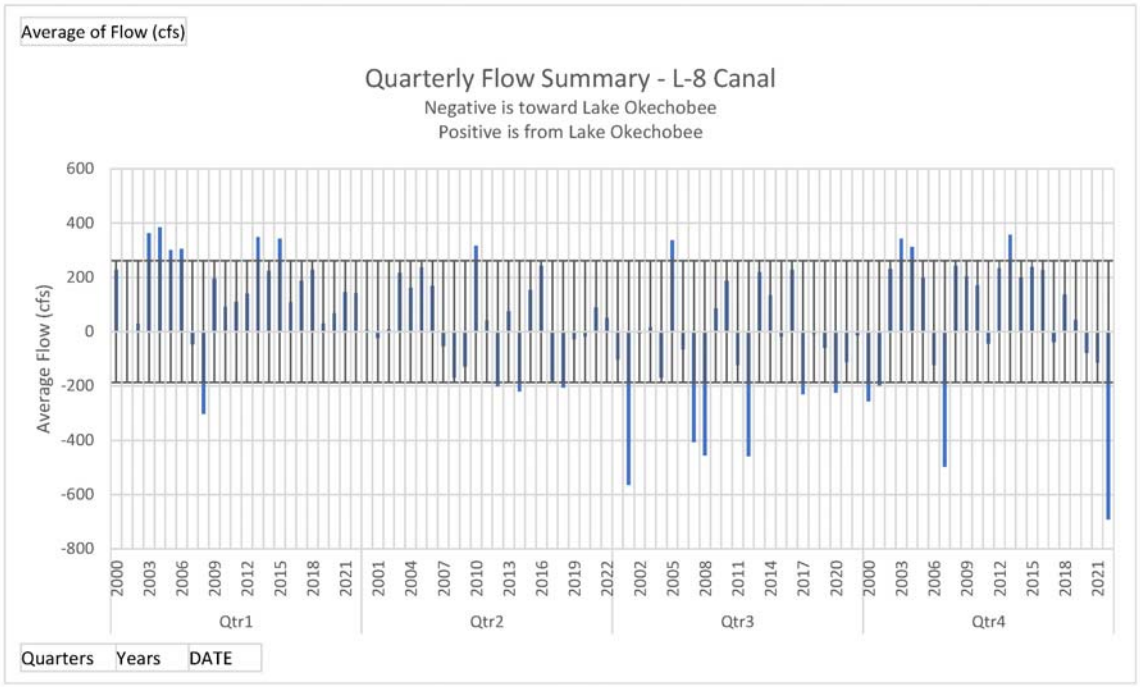


CHART E



- Based on the L-8 Canal flow analyses, flow is to Lake Okechobee 36.8 percent of the time and from Lake Okechobee 63.2 percent of the time.

- Annual summary and quarterly summary of head difference between L-8 Canal and S352_H (Lake Okechobee) water levels are shown on Charts F and G below.

CHART F

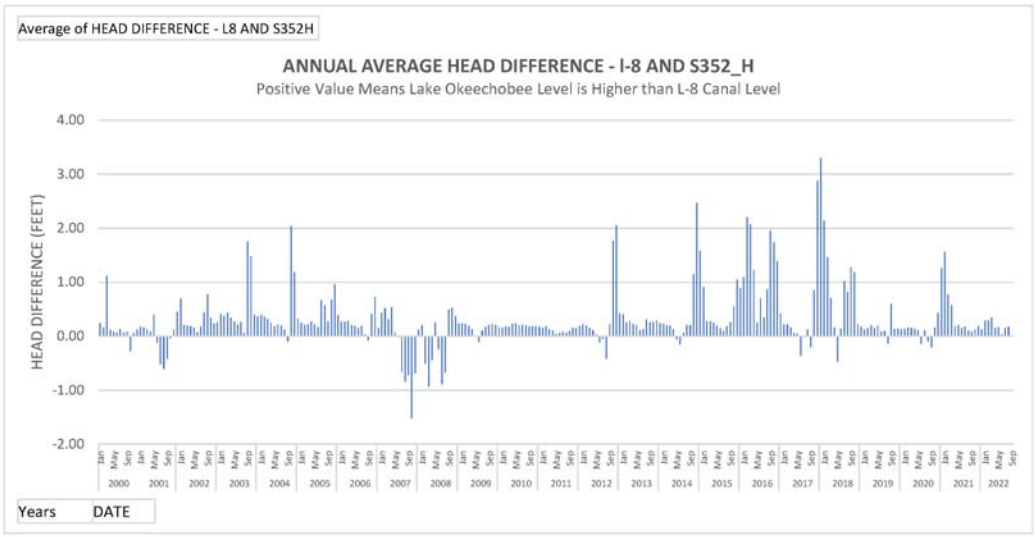
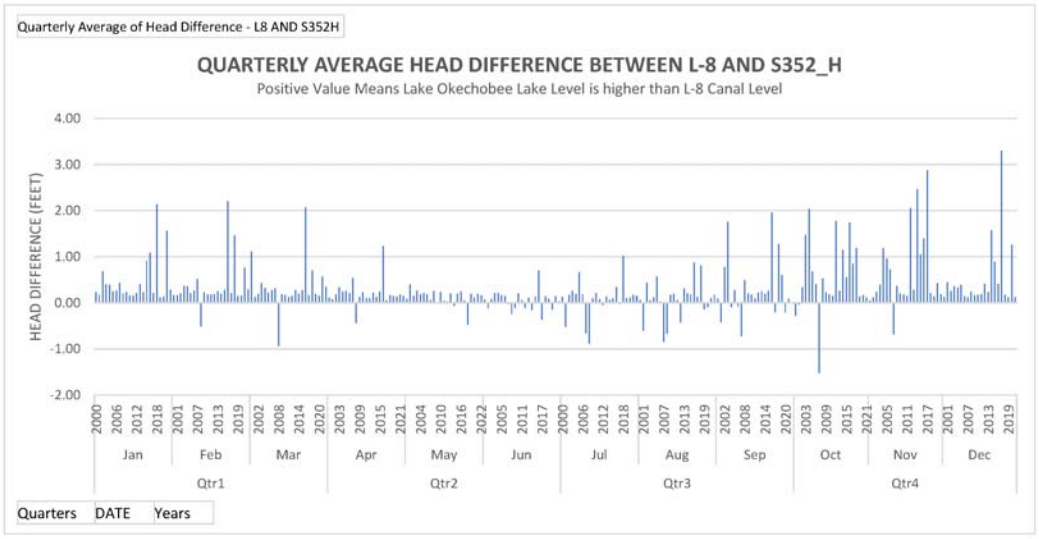


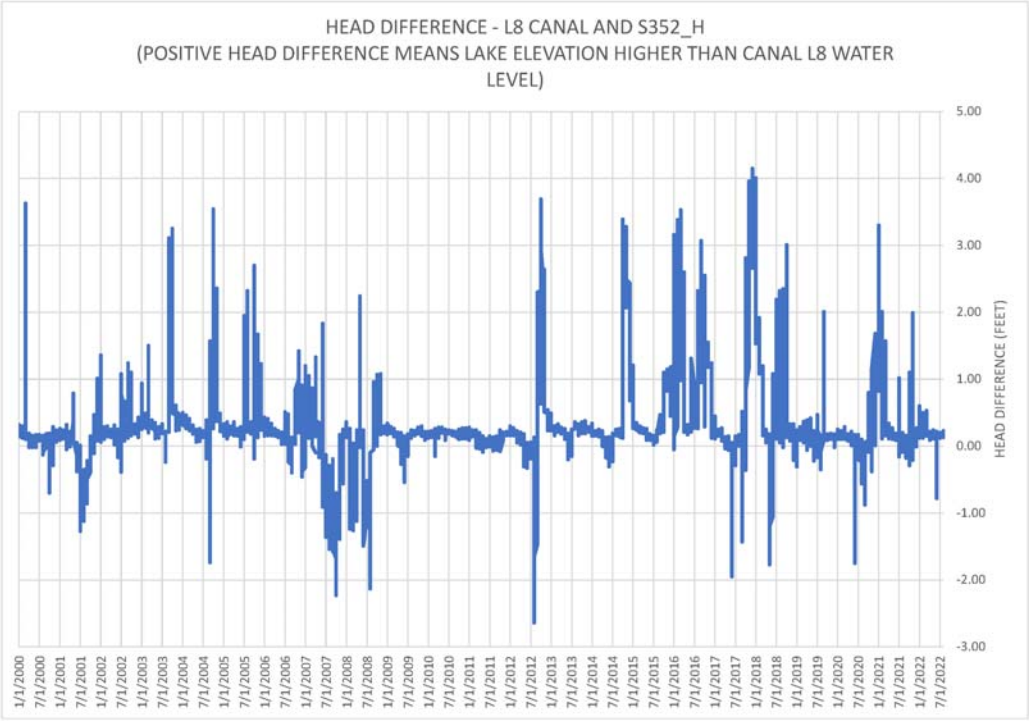
CHART G



Analysis should consider the observed head across the S-271 lake outlet/inlet structure at the terminus of the L-8 Canal, and its corresponding flow. Estimate the total head between the east side of the S-76 structure (L-8 Canal gate structure) and the lake stage, plus the corresponding flow.

The historic head differences between the water level in the L-8 canal at structure S-76 and the lake stage at structure S352_H are shown on Chart H.

CHART H



The historic range is between +/- 4.1 feet where the lake level is higher than the canal level to +/- 2.6 feet where the canal water level is higher than the lake level.

Using the L-8 and S352_H stage data presented above, conditions for inflow and outflow from the reclaimed Mayaca Materials facility are:

- L-8 Berm elevation = 20 feet NAVD88
- Planned Mayaca Materials reclamation berms crest elevation = 16 feet NAVD 88
- Typical ground water elevation (normal pool) = +/- 8 feet NAVD 88
- Available storage between Planned Mayaca Materials reclamation berms (assuming 3 feet of freeboard) and ground water level is +/- 5 feet.
- Surface water elevations:

	L8 441	S352_H
Average	12.16	12.46
Maximum	17.02	16.99
Minimum	6.05	7.28
Median	12.35	12.71

On average, approximately four feet of water can be transferred from the L-8 canal to the reclaimed Mayaca Materials facility.

The average, maximum, minimum, and median flows in the L-8 canal for the period of record analyzed (January 2000 through September 2022) are:

	FLOW (cfs)
Average	49
Maximum	622
Minimum	-1920
Median	74

Based on the average flow of 49 cfs, Phase I of the reclaimed mine can retain approximately +/- 115 days of the entire flow out of Lake Okeechobee into the L-8 canal to a reclaimed lake elevation of 13 feet NAVD 88. Under maximum flow conditions, (662 cfs) approximately +/- eight days of the entire flow out of Lake Okeechobee can be placed into the reclaimed mine.

Modes of Operations

Three modes of operation are envisioned that should be evaluated:

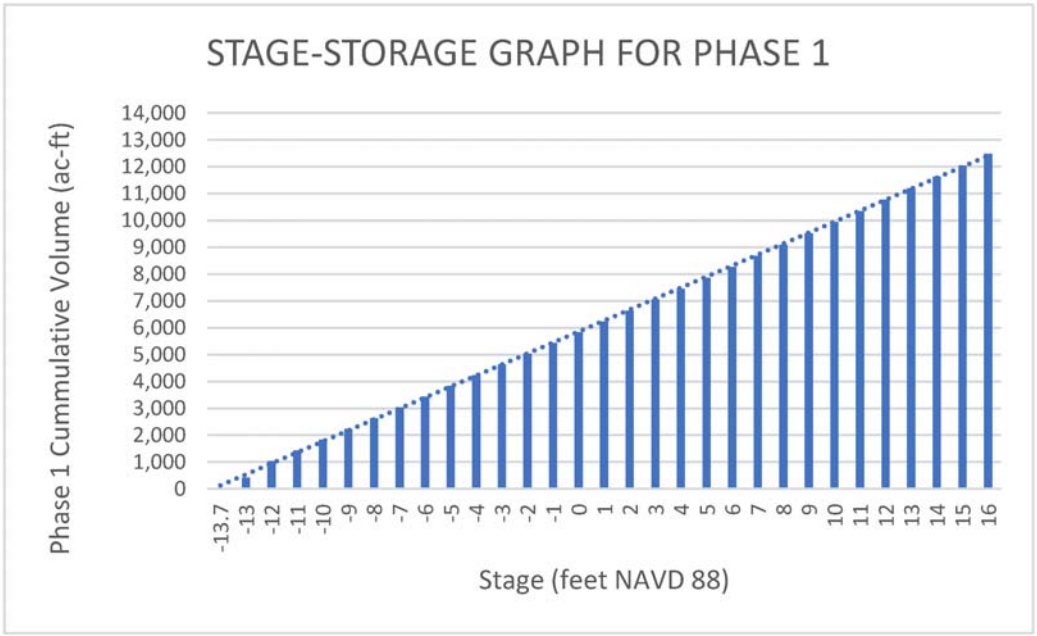
1. Lake Okeechobee regulatory releases. This occurs when the lake requires regulatory releases for flood control and the L-8 Canal is used as a lake regulatory release outlet. Although the upcoming Lake Okeechobee System Operation Manual (LOSOM) may rely minimally or not rely at all on the L-8 Canal as an outlet for lake regulatory releases, it would still help to assess

this mode of operation for emergency operations under LOSOM, or for operation under a future SOM that might include this option.

Mode 1 - Lake Okeechobee regulatory releases

The Mode 1 Lake Okeechobee regulatory releases operational scenario where the L-8 Canal is used as a Lake Okeechobee regulatory release outlet is described above. The Reclamation Lakes stage-storage data is presented below.

	Stage Storage - North Cell (Normal Pool 8.0 feet NAVD 88)					Stage Storage - South Cell (Normal Pool 8.0 feet NAVD 88)					Combined Stage Storage - South and North Cells (Normal Pool 8.0 feet NAVD				
Contour	Contour	Depth	Incremental	Cumulative	Cumulative	Contour	Depth	Incremental	Cumulative	Cumulative	Contour	Depth	Incremental	Cumulative	Cumulative
Elevation	Area		Volume	Volume	Volume	Area		Volume	Volume	Volume	Area		Volume	Volume	Volume
(feet NAVD 88)	(sq. ft)	(ft)	(cu. ft)	(cu. ft)	(acre-ft)	(sq. ft)	(ft)	(cu. ft)	(cu. ft)	(acre-ft)	(sq. ft)	(ft)	(cu. ft)	(cu. ft)	(acre-ft)
-13.7	8,629,340	0.70	n/a	0	0	9,587,272	0.70	0	0	0	18,216,612	0.70	0	0	0
-13	8,634,576	1.00	8,631,958	8,631,958	198	9,604,242	1.00	9,595,757	9,595,757	220	18,238,818	1.00	18,227,715	18,227,715	418
-12	8,643,433	1.00	8,639,005	17,270,962	396	9,632,940	1.00	9,618,591	19,214,348	441	18,276,374	1.00	26,889,553	45,117,268	1,036
-11	8,652,298	1.00	8,647,866	25,918,828	595	9,661,679	1.00	9,647,309	19,265,900	442	18,313,976	1.00	35,566,137	62,455,691	1,434
-10	8,661,167	1.00	8,656,732	34,575,560	794	9,690,458	1.00	9,676,068	19,323,378	444	18,351,625	1.00	44,251,629	79,817,766	1,832
-9	8,670,041	1.00	8,665,604	43,241,164	993	9,719,277	1.00	9,704,867	19,380,936	445	18,389,318	1.00	52,946,032	97,197,660	2,231
-8	8,678,911	1.00	8,674,476	51,915,640	1,192	9,748,136	1.00	9,733,707	19,438,574	446	18,427,048	1.00	61,649,347	114,595,379	2,631
-7	8,687,792	1.00	8,683,352	60,598,992	1,391	9,777,036	1.00	9,762,586	19,496,292	448	18,464,828	1.00	70,361,578	132,010,925	3,031
-6	8,696,678	1.00	8,692,235	69,291,228	1,591	9,805,977	1.00	9,791,506	19,554,092	449	18,502,656	1.00	79,082,734	149,444,312	3,431
-5	8,705,568	1.00	8,701,123	77,992,351	1,790	9,834,960	1.00	9,820,468	19,611,975	450	18,540,527	1.00	87,812,819	166,895,553	3,831
-4	8,714,459	1.00	8,710,013	86,702,364	1,990	9,863,982	1.00	9,849,471	19,669,939	452	18,578,441	1.00	96,551,835	184,364,654	4,232
-3	8,723,355	1.00	8,718,907	95,421,271	2,191	9,893,046	1.00	9,878,514	19,727,985	453	18,616,401	1.00	105,299,785	201,851,620	4,634
-2	8,732,256	1.00	8,727,806	104,149,077	2,391	9,922,150	1.00	9,907,598	19,786,112	454	18,654,406	1.00	114,056,675	219,356,460	5,036
-1	8,741,158	1.00	8,736,707	112,885,784	2,592	9,951,295	1.00	9,936,722	19,844,320	456	18,692,453	1.00	122,822,506	236,879,181	5,438
0	8,750,056	1.00	8,745,607	121,631,391	2,792	9,980,480	1.00	9,965,887	19,902,610	457	18,730,536	1.00	131,597,278	254,419,784	5,841
1	8,758,952	1.00	8,754,504	130,385,895	2,993	10,009,704	1.00	9,995,092	19,960,979	458	18,768,656	1.00	140,380,987	271,978,265	6,244
2	8,766,791	1.00	8,762,871	139,148,766	3,194	10,038,969	1.00	10,024,337	20,019,429	460	18,805,760	1.00	149,173,103	289,554,090	6,647
3	8,807,769	1.00	8,787,280	147,936,046	3,396	10,068,273	1.00	10,053,621	20,077,958	461	18,876,042	1.00	157,989,667	307,162,770	7,051
4	8,849,435	1.00	8,828,602	156,764,648	3,599	10,097,618	1.00	10,082,945	20,136,566	462	18,947,053	1.00	166,847,593	324,837,260	7,457
5	8,891,178	1.00	8,870,306	165,634,954	3,802	10,127,002	1.00	10,112,310	20,195,255	464	19,018,180	1.00	175,747,264	342,594,857	7,865
6	8,932,997	1.00	8,912,087	174,547,041	4,007	10,156,426	1.00	10,141,714	20,254,024	465	19,089,423	1.00	184,688,755	360,436,020	8,274
7	8,974,890	1.00	8,953,943	183,500,985	4,213	10,185,890	1.00	10,171,158	20,312,872	466	19,160,780	1.00	193,672,143	378,360,898	8,686
8	9,016,856	1.00	8,995,873	192,496,858	4,419	10,215,393	1.00	10,200,641	20,371,799	468	19,232,248	1.00	202,697,499	396,369,642	9,099
9	9,058,891	1.00	9,037,873	201,534,731	4,627	10,244,936	1.00	10,230,164	20,430,806	469	19,303,827	1.00	211,764,895	414,462,394	9,515
10	9,100,996	1.00	9,079,943	210,614,674	4,835	10,274,519	1.00	10,259,727	20,489,892	470	19,375,515	1.00	220,874,401	432,639,296	9,932
11	9,143,172	1.00	9,122,084	219,736,758	5,044	10,304,141	1.00	10,289,330	20,549,057	472	19,447,312	1.00	230,026,087	450,900,488	10,351
12	9,185,424	1.00	9,164,298	228,901,055	5,255	10,333,803	1.00	10,318,972	20,608,301	473	19,519,227	1.00	239,220,027	469,246,114	10,772
13	9,227,746	1.00	9,206,585	238,107,641	5,466	10,363,504	1.00	10,348,653	20,667,625	474	19,591,250	1.00	248,456,294	487,676,321	11,196
14	9,270,135	1.00	9,248,941	247,356,581	5,679	10,393,244	1.00	10,378,374	20,727,027	476	19,663,380	1.00	257,734,955	506,191,249	11,621
15	9,312,588	1.00	9,291,362	256,647,943	5,892	10,422,833	1.00	10,408,039	20,786,413	477	19,735,422	1.00	267,055,982	524,790,937	12,048
16	9,354,386	1.00	9,333,487	265,981,430	6,106	10,449,226	1.00	10,436,030	20,844,068	479	19,803,612	1.00	276,417,460	543,473,442	12,476



The Reclamation Lakes water storage will be created from interconnected reclaimed limestone quarry pits: North Cell +/- 221.7 acres and South Cell +/- 239.2 acres, as measured from the normal pool elevation of 8 feet NAVD 88. Each cell will have a mean depth of approximately 21.7 feet below normal pool and perimeter berms crested at an elevation of 16 feet NAVD 88. The total storage capacity of the two cells will be approximately +/- 11,200 acre-feet (ac-ft) to the maximum pool elevation of 13 feet NAVD 88. The South Cell will include an inflow spillway, an outflow spillway or pump station and a divide between the North and South Cells which is a Florida Power & Light Company powerline ROW. The designs of the spillways and pumps have not been prepared as this point of the planning.

According to Appendix 2-2: Annual Permit Report for the L-8 Flow Equalization Basin Permit Report (May 1, 2021–April 30, 2022), the L-8 basin encompasses approximately 160 square miles, with the majority located in northern Palm Beach County, and approximately three square-miles in southwestern Martin County. Currently, the L-8 canal includes the L-8 Flow Equalization Basin. The primary operational objective of the L-8 FEB is to improve the operations of STA-1E and STA-1W by attenuating peak flows and temporarily storing stormwater runoff. The proposed Mayaca Materials FEB will augment attenuating peak flows and temporary stormwater runoff storage.

2. Lake Okeechobee water supply releases. This occurs when the downstream basins (particularly the L-8 basin and potentially other downstream basins) are in dry or drought conditions, other sources of water supply are not available, and the lake stage is sufficiently high relative to the L-8 Canal stage to convey water. [Note that the flow data at L8.441 has a positive value for all lake releases and doesn't distinguish between Mode #1 and Mode #2]

Mode 2 - Lake Okeechobee water supply releases
The Mode 2 Lake Okeechobee water supply releases operational scenario where the L-8 Canal is used to convey water through the L-8 Canal is also described above.

3. L-8 Canal flood control releases. This operation occurs when the L-8 Canal stage exceeds a particular stage threshold (approx. 16 ft NGVD, need to confirm) and the south end of the canal (near the S-5A complex) is not capable of conveying flood control releases away from the L-8 Canal to relieve the high stages at the north end of the L-8 Canal. Under these conditions, the L-8 Canal may flow into Lake Okeechobee, if the lake stage is lower than the canal stage, to relieve high stages in the northern L-8 Canal.

Mode 3 - L-8 Canal flood control releases
When the L-8 Canal stage exceeds a stage threshold of approximately 16 feet NGVD 88, the reclaimed lakes can relieve the high L-8 Canal stages. The maximum flow into Lake Okeechobee during these events is shown to be 1620 cfs. Based on the inflow to Lake Okeechobee of 1620 cfs, the reclaimed mine with the central flow diversion berms in place can retain approximately ½ day of the entire flow toward Lake Okeechobee into the L-8 canal to a reclaimed lake elevation of 13 feet

NAVD 88. Without the central flow diversion berms in place, the reclaimed lakes can retain approximately 0.8 days of the entire flow toward Lake Okeechobee.

Bi-Directional Flow
For instances of a short period of time between flow events, especially flow events where the flow direction changes, please quantify the annual average volume of stored water release prior to the initiation of flow-through in either direction.

The graphs presented above show that the flow in the L-8 Canal changes direction. The water storage in the reclaimed lakes can store water flowing in either direction as described above.

Nutrient Reduction
It is recommended to reference the L-8 FEB phosphorus load reduction as a reference for the potential for load reduction in the Mayaca Materials facility.

The nutrient reduction anticipated in the proposed facility is from an inflow range between 77 to 141 ppb to an outflow long-term goal of 20 ppb. The range of inflow concentrations in the last five years for the L- 8 FEB (comparable to the proposed facility) is between 60 to 246 ppb. However, for the year with an inflow concentration of 60 ppb, the outflow concentration was 47 ppb, the lowest in the 5-year period [Refer to SFER Vol III App 2-2].

The plan references A-1 FEB and its ability to reduce the inflow concentration to 20 ppb or less. The A-1 FEB has a maximum depth of 4 ft and contains abundant vegetation, plus a very long flow-path between inflow and outflow (similar in length to the proposed facility). If the proposed facility is intended to include areas that are comparable to the A-1 FEB, please provide further details.

Please consider revising the goal to nutrient load reduction (maximize flow-through) versus nutrient concentration reduction (potentially less flow-through). Nutrient load reduction is usually the goal for systems that treat a portion of the basin runoff into Lake Okeechobee, whereas phosphorus concentration reduction is usually the goal for treatment systems that treat the entirety of the basin runoff in the EAA before it is discharged to the Everglades.

Using the L-8 FEB as a model for the Mayaca Materials Reclamation Lakes FEB, and according to Appendix 2-2: Annual Permit Report for the L-8 Flow Equalization Basin Permit Report (May 1, 2021–April 30, 2022), Total Nitrogen (TN) and Total Phosphorus (TP) nutrients have been analyzed from stations G538 (inflow) and G539 (outflow) at the L-8 FEB. The mean TN and TP concentrations at the outflow station (G539) were lower than at the inflow station (G538). Similarly, the TN flow-weighted mean concentration (FWMC) at the outflow structure was 1.933 milligrams per liter (mg/L), which was lower than the TN FWMC at the inflow structure (3.744 mg/L), and the TP FWMC at the outflow structure was 0.068 mg/L, which was lower than the TP FWMC at the

inflow structure (0.180 mg/L). It is expected that the Mayaca Materials Reclaimed Lakes FEB may achieve similar reductions in TN and TP results.

Specific Conductance
Specific conductance tends to be higher in the outflow than the inflow for former rock pits used as flow-ways, such as the L-8 FEB. Located at the south end of the L-8 Canal, the L-8 FEB specific conductance of the outflow is reported as exceeding the one for the inflow (SFER Vol III App 2-2). This has not been an issue with flows from the L-8 FEB to STA-1W or STA-1E, most likely due to the dilution effect of multiple sources of water blending with the L-8 FEB discharges.

Further investigation and analyses will be necessary to evaluate possible changes in specific conductance resulting from the Mayaca Materials Reclaimed Lakes FEB.

Storage or Flow-Way
The proposal presents the project as a storage facility with 18,000 ac-ft of storage for Phase 1, and another 18,000 ac-ft of storage for Phase 2. However, without a pump station to release water below the gravity outflow levels, the water in the facility cannot be removed, and therefore it does not fulfill the function of a storage facility, which would normally be able to store and release nearly its entire stored volume multiple times a year (as the L-8 FEB). The proposed plan could be better described as a flow-way with its primary function as a settling basin for suspended particulates in the L-8 Canal flow. Nevertheless, as a relatively large setting basin, the flow-way has potential as a nutrient load reduction facility and could benefit the water quality in the L-8 Canal, Lake Okeechobee, and downstream destinations to the south or east.

A more detailed evaluation of water storage has developed as the mine and reclamation plans have been developed. The Phase I storage in the North and South Cells, is shown above to be 33,600 ac-ft. Due to the potential water storage capacities and expected low flow velocities, suspended sediment will likely settle in the cells.

STA or Sediment Settling Basin
The facility is also categorized in the plan as a Stormwater Treatment Area (STA). However, the term STA, as used for facilities in the EAA and in the Lake Okeechobee Watershed, implies a constructed wetland. Other than a brief mention of variable depths within the proposed facility, it appears that the facility resembles the L-8 FEB, with the key difference that the Mayaca Materials facility functions as a sediment settling flow-way and not as a storage attenuation facility. If the facility includes areas that can be considered constructed wetlands for nutrient update, please describe these areas in further detail. Information needed include location, acreage, target water depth (normally 1.25 to 1.5 ft), and minimum and maximum water depth (normally 0.5 ft min water depth and 4.0 ft max water depth). Also, it should be explained how the water from the deeper portions of the facility (26 ft deep) would flow into the STA portions of the facility.

The Mayaca Materials Reclaimed Lakes facility will have perimeter areas that can be considered constructed wetlands for nutrient update. The boundary of the reclaimed mine will be sloped ranging from 4 horizontal to 1 vertical (4:1) to 10:1 and the littoral zones along the slopes will be planted herbaceous plants as required by the Environmental Resource Permit and Palm Beach County requirements. Because the permit applications have not been prepared, submitted to the agencies, the details of the littoral plantings have not been specified.

Increased Head Over Saltwater Interface
It's possible that the facility may increase the surface water head over the surficial aquifer, acting as an extension of the L-8 Canal to increase the head over the saline (connate) groundwater. However, as an open pit filled with water, the groundwater flux that can traverse the flow-way would encounter no resistance to flow and could more easily flux into the pit potentially producing elevated specific conductance. Therefore, outflow from former rock pits may possibly exhibit higher salinity compared to the inflow.

An evaluation of potential seepage from the Mayaca Materials Reclaimed Lakes FEB into the surficial aquifer was conducted based on information provided in:

- *Report of Investigations No. 58, Seepage Beneath Hoover Dike Southern Shore of Lake Okeechobee, Florida, by Frederick W. Meyer, prepared by the United States Geological Survey In Cooperation with the Florida Department of Natural Resources, Division of Interior Resources, Bureau of Geology and the Central and Southern Florida Flood Control District U. S. Army Corps of Engineers, 197; and,*
- *Technical Memorandum 105, Hydrogeologic Investigation along Eastern Portions of Lake Okeechobee, by Jonathan E. Shaw, South Florida Water Management District, Groundwater Division, Resource Planning Department, August 1980.*

Using the data and aquifer coefficients provided in these reports and assuming a water elevation in the Mayaca Materials Reclaimed Lakes FEB of 13 feet NAVD 88, a preliminary analysis shows seepage out of the FEB can be on the order of 11,000 ac-ft per day. Further evaluation is needed to determine whether outflow from the reclaimed lakes may possibly exhibit higher salinity compared to the inflow.

Infrastructure Needed
The plan suggests that no infrastructure will be needed outside of the inflow and outflow gated structures. Please consider the need for a protective perimeter levee with a minimum elevation based on assumed wind effects (wave, wind set-up, and wave runup] and accumulation of direct rainfall on the facility during major tropical storms or hurricanes.

The reclamation plan includes berms surrounding the reclaimed lakes. The existing L-8 Levee on the south side of the South Cell has a crest elevation of +/- 20 feet NAVD 88. Berms will be constructed around the remaining portions of the North and South Cells with a crest elevation of +/- 16 feet NAVD 88 and tied into the existing Levee. Using a 13-foot NAVD 88 maximum pool elevation within the cells, three feet of freeboard are to be provided for contingencies such as wave

runup and major rainfall events.

* * * *

Thank you for the opportunity to provide these responses to your preliminary comments concerning the Mayaca Materials facility. We look forward to meeting with you in the near future and continuing to move forward on the proposed project. If you have comments/questions concerning the information presented herein, please contact me.

Yours very truly,
The Colinas Group, Inc.
Engineering and Environmental Consultants

Mark R. Stephens, P.G., P.E.
Principal Consultant / President

Attachments

electronically submitted

cc: Mr. Michael Rendina - Mayaca Materials
Mr. Jeff Attwater - Ballard Partners
Ms. Kerri Barsh - Greenburg Traurig, P.A.

August 23, 2023 Presentation to the District staff

2031 E. Edgewood Drive, Suite 5, Lakeland, FL 33803-3601 • (863) 669-9141 • Fax: (863) 669-1742

MAYACA MATERIALS FLOW EQUALIZATION BASIN PROPOSAL

FIVE STONES QUARRY

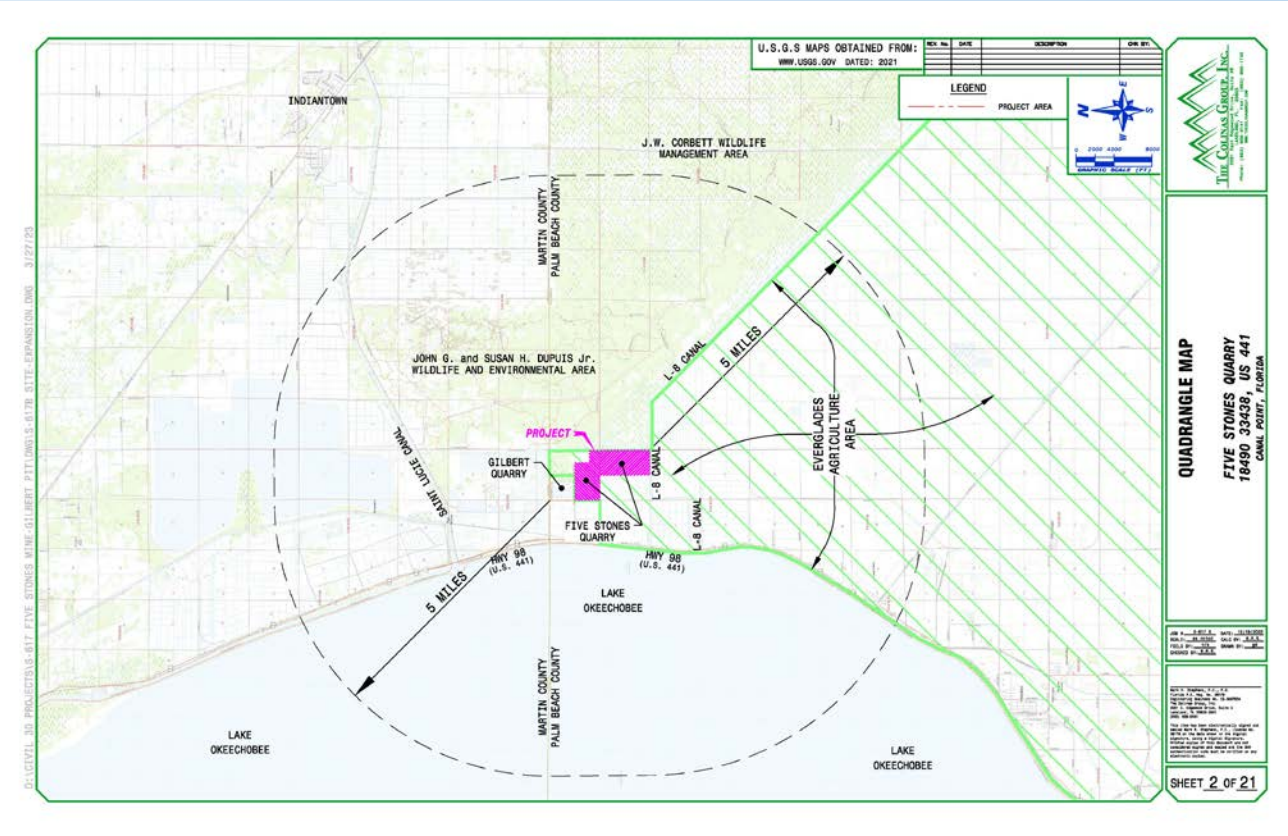
August 23, 2023

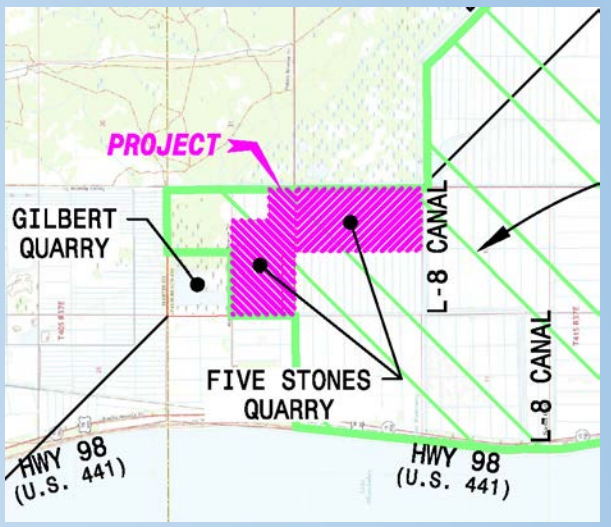
MAYACA MATERIALS

INTRODUCTION

Mayaca Materials currently operates contiguous two limerock quarries (Gilbert Quarry and Five Stones Quarry) in Palm Beach County. The **Five Stones Quarry** is the subject of this proposal.

Mayaca Materials is proposing a **Public/Private Partnership (P3)** for the project with the quarry property to be used as a Mayaca Materials Flow Equalization Basin (FEB) for the L-8 Canal.





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The P3 envisioned for the Mayaca Materials proposed project includes the following:

- Mayaca Materials, in conjunction with SFWMD, will **assist in designing and permitting** the project, assist in financing construction, construct and deliver the completed facility in pre-determined phases.

- The Mayaca Materials property would be **deeded** over to the State or a Not-for-Profit entity who would own the FEB upon completion.

- SFWMD would **operate and maintain** the FEB and provide for the conveyance systems to and from the FEB from the L-8 Canal.

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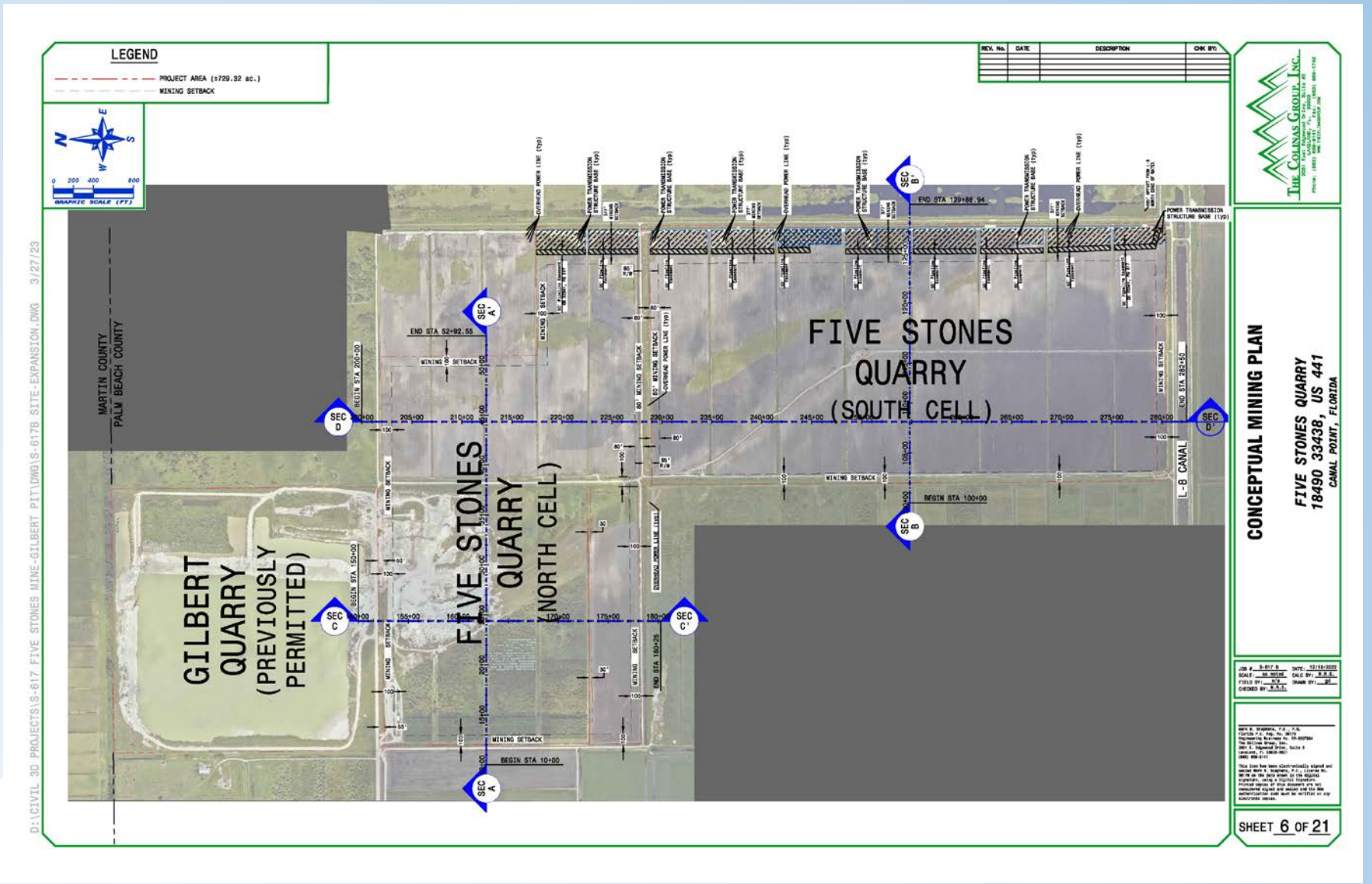
The Mayaca Materials Five Stones Quarry +/- 460.9 acres within the L-8 Drainage Basin.
The +/-460.9 acres comprise Phase I of the proposed project.



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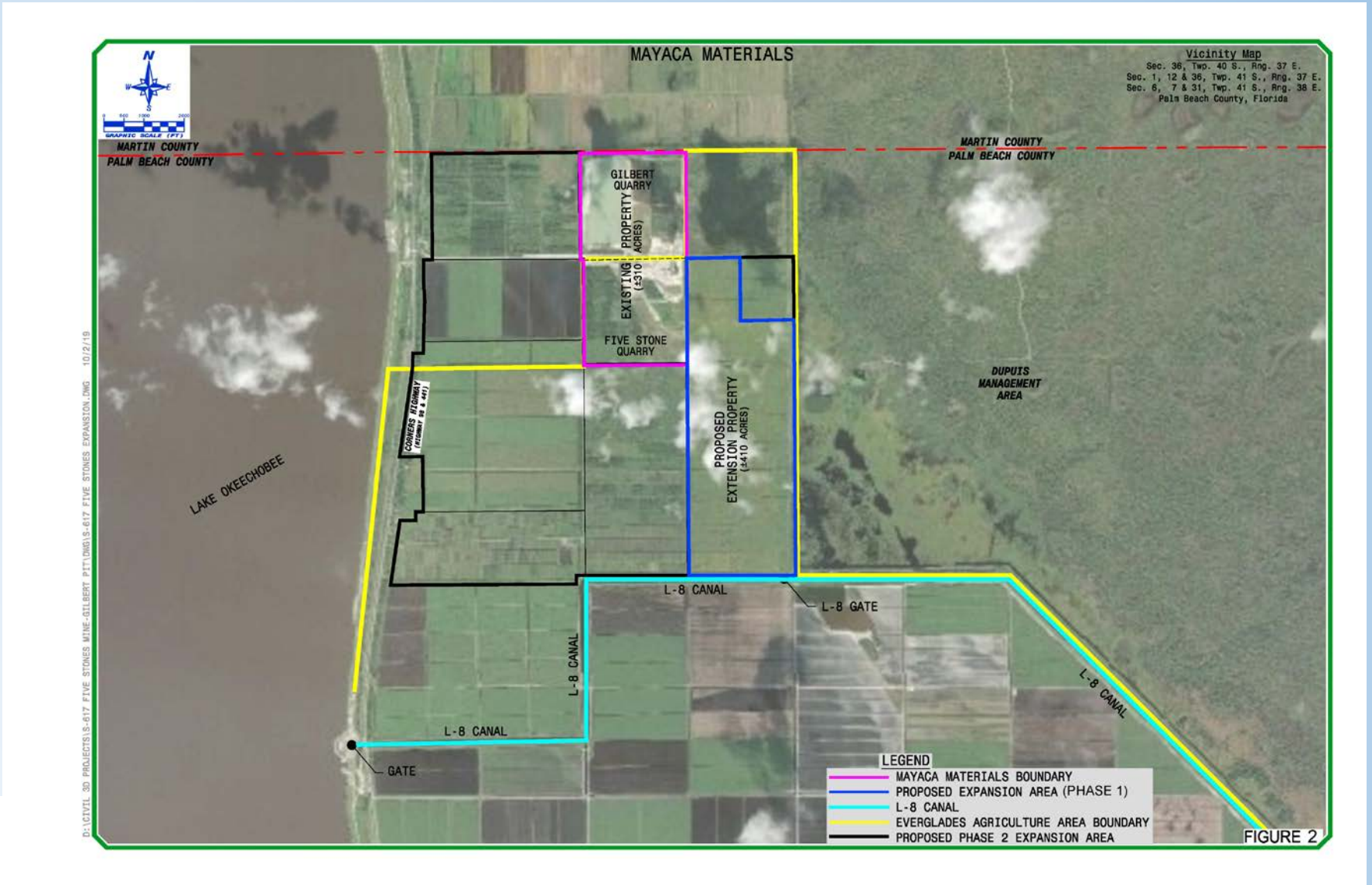
NOTE: Phase 2 adds an additional +/- 900 acres for the proposed project, mined to a depth of approximately 26 feet which will allow for an additional water storage capacity of approximately +/- 22,400 acre-feet.



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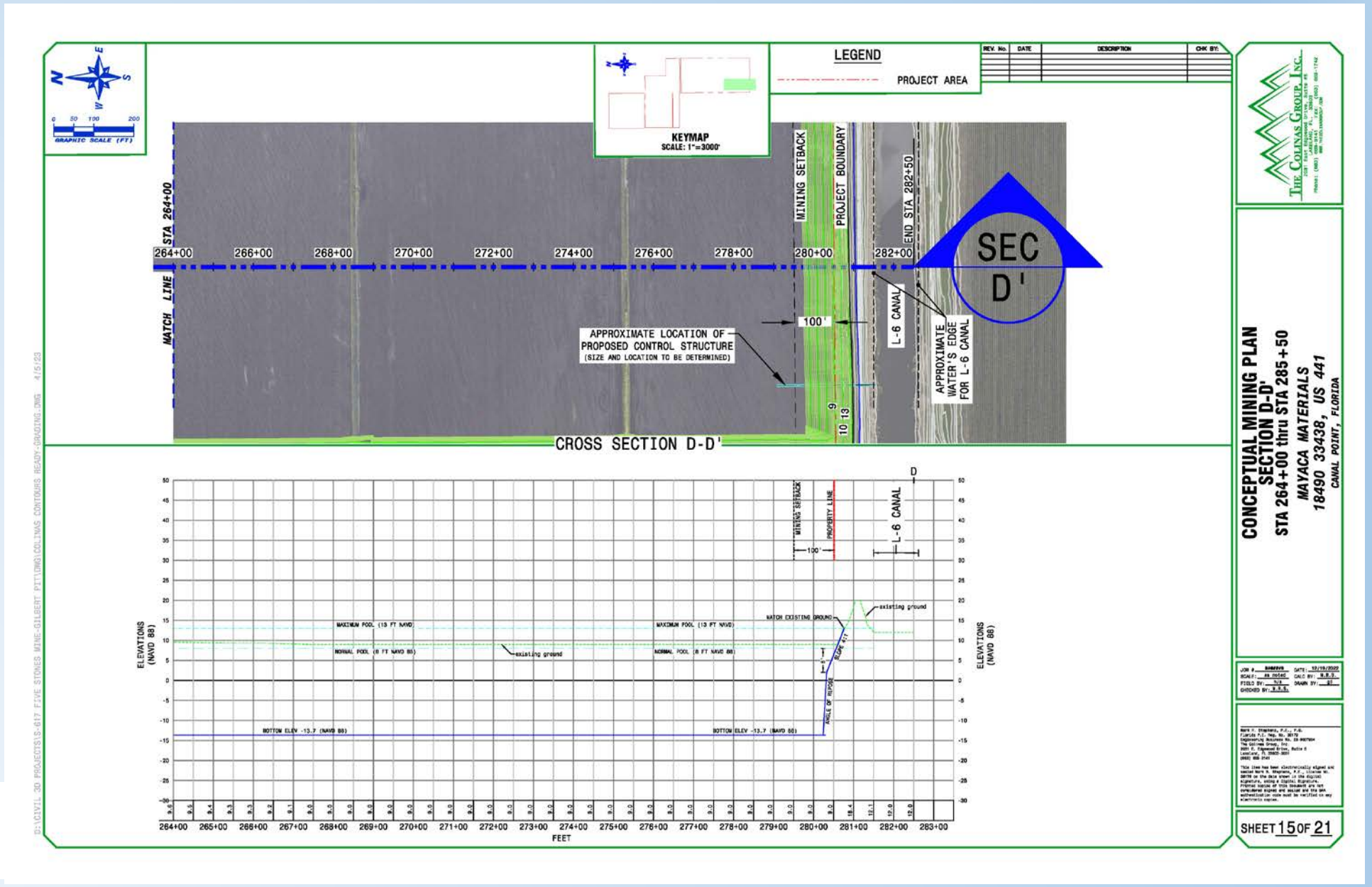
The quarry is to be mined to an elevation of approximately -13.7 feet NAVD 88 (depth of approximately 26 feet) which will allow for a water storage capacity of approximately +/- 11,200 acre-feet.



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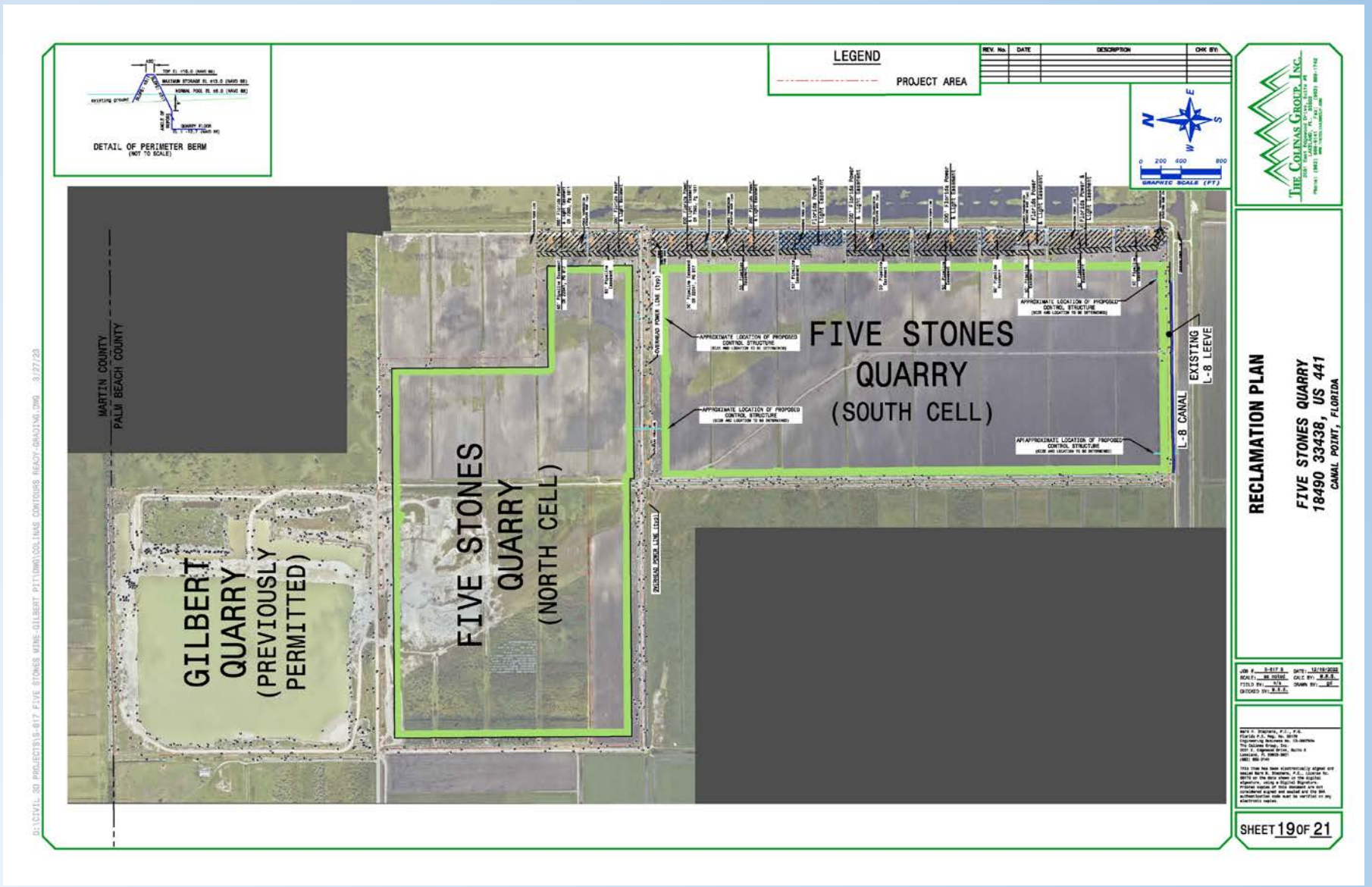
Conceptual Reclamation Plan

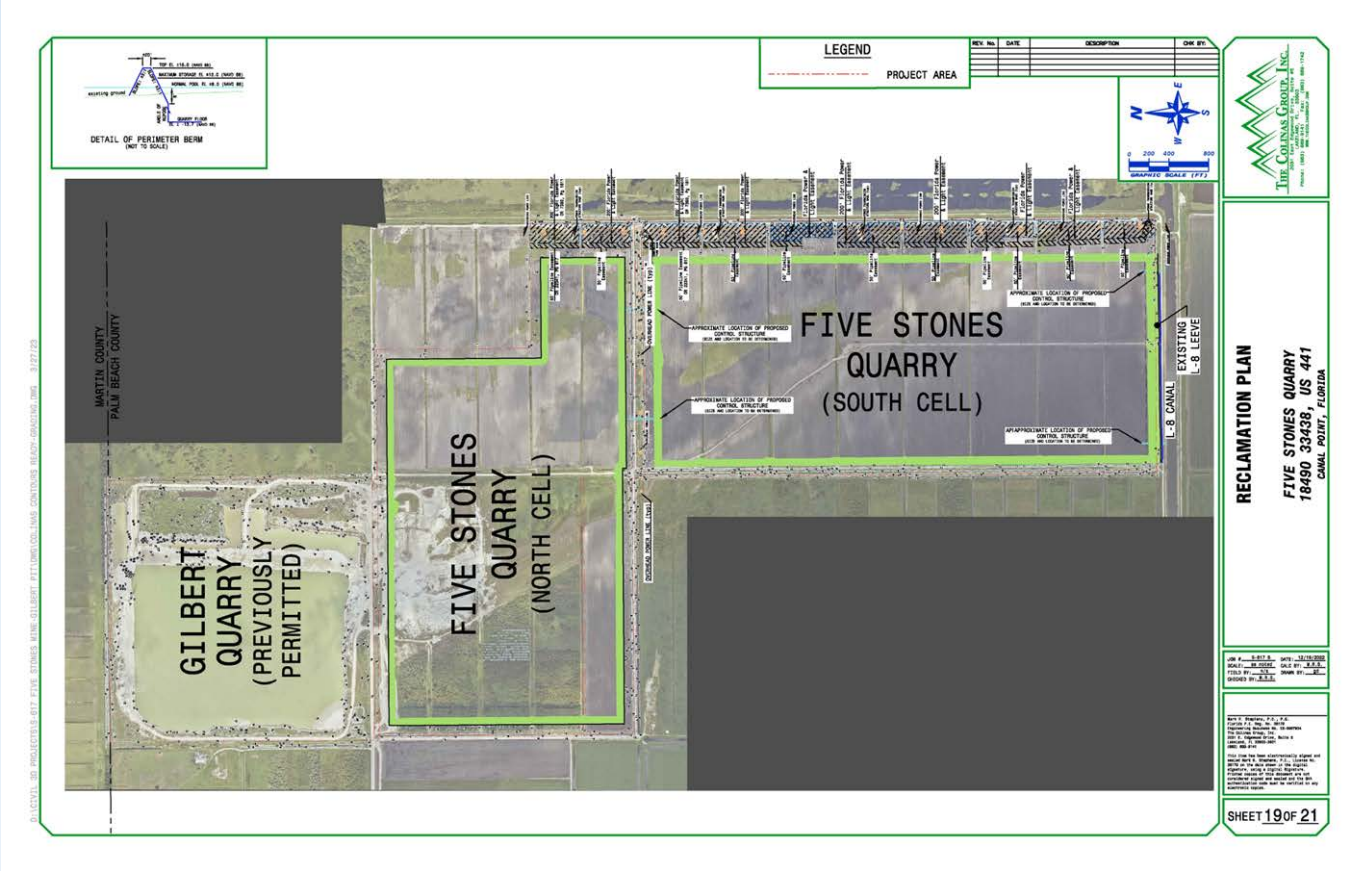
The FEB project will include two cells separated by the FPL ROW. The North and South Cells will be interconnected using culverts to be installed through the ROW to provide a combined water storage capacity.



Key Reclaimed Quarry Design Parameters

Using the analysis of the L-8 and S352_H stage, conditions for inflow and outflow from the reclaimed Mayaca Materials facility are:

- L-8 Berm elevation = 20 feet NAVD88
- Planned Mayaca Materials reclamation berms crest elevation = 16 feet NAVD 88
- Typical ground water elevation (normal pool) = +/- 8 feet NAVD 88
- Available storage between Planned Mayaca Materials reclamation berms (assuming 3 feet of freeboard) and ground water level is +/- 5 feet.



Conceptual Operational Plan

- When the flow in the L-8 Canal is from Lake Okeechobee, water from the L-8 Canal west of Structure S-76 (a gated spillway) can be moved into the FEB at the southwest corner of the FEB, then flow into the two cells, finally discharging back into the L-8 Canal on the east side, downgradient side, of Structure S-76.

- When the gated Structure S-76 is closed, the water level in the L-8 Canal will be higher on the west side of the gate allowing water to be moved into the FEB from the southwest corner, then discharge downstream of Structure S-76 back into the L-8 Canal.

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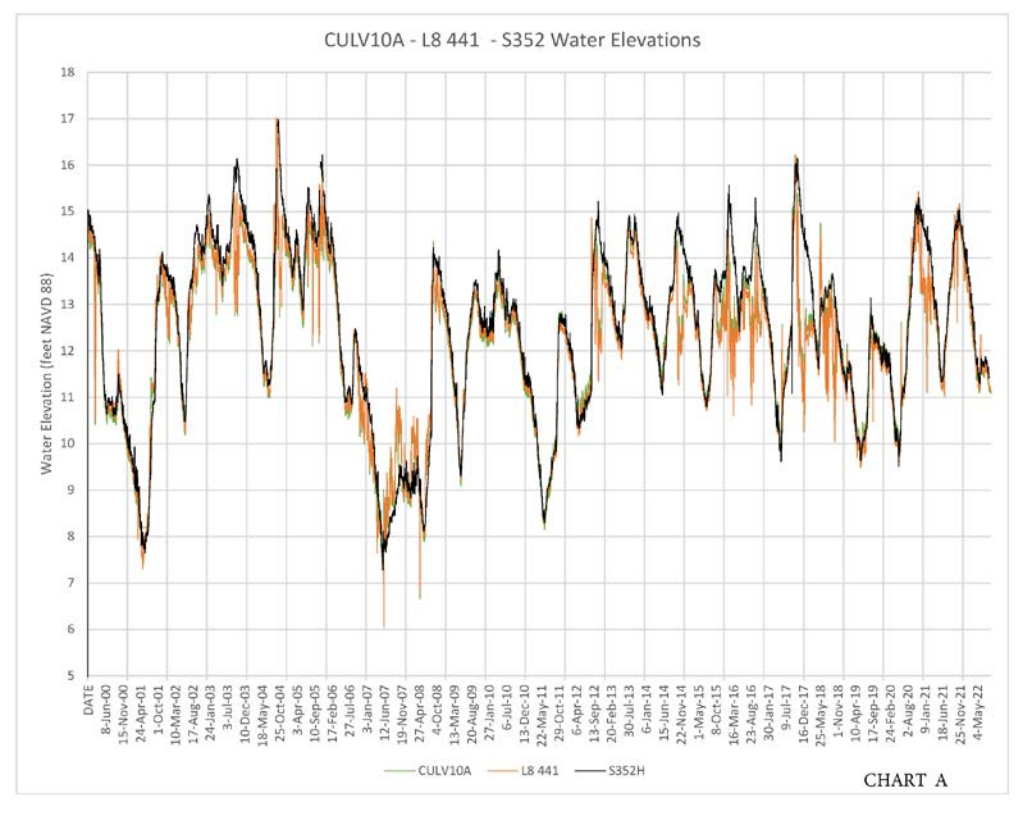
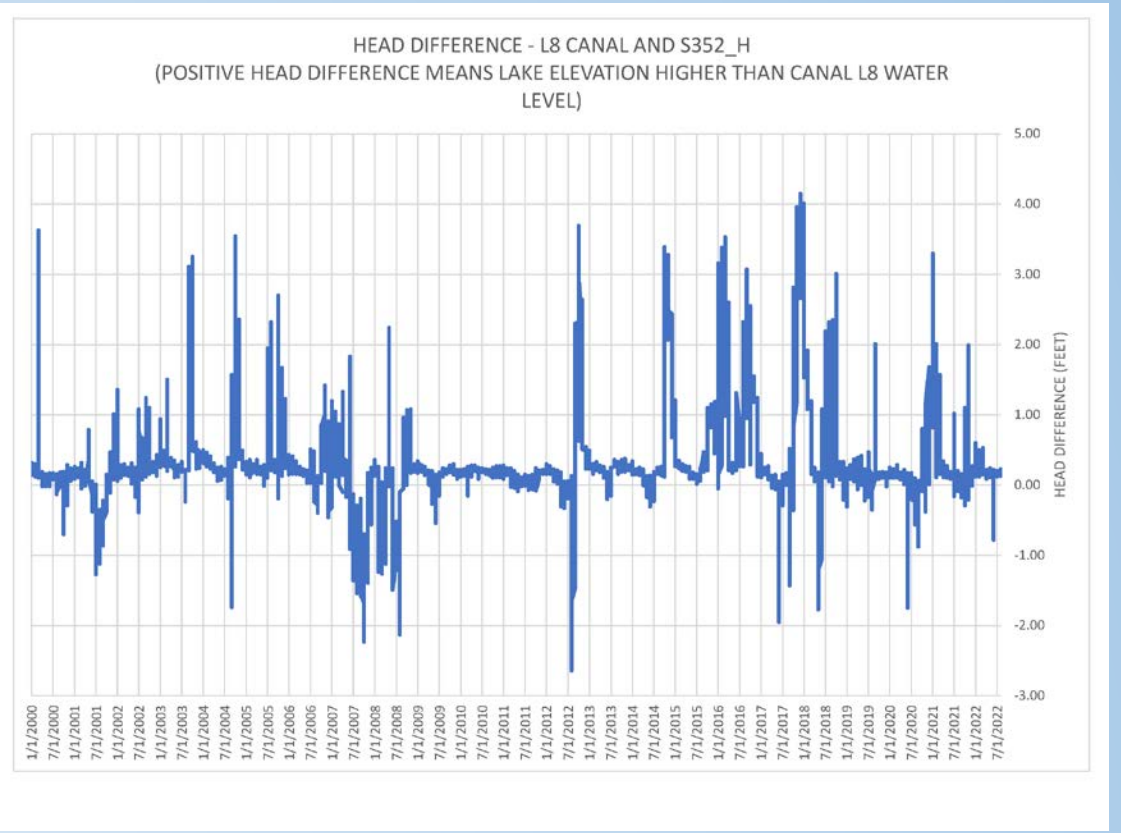
Based on the analysis of water elevations

- On average, approximately four feet of water can be transferred from the L-8 canal to the reclaimed quarry





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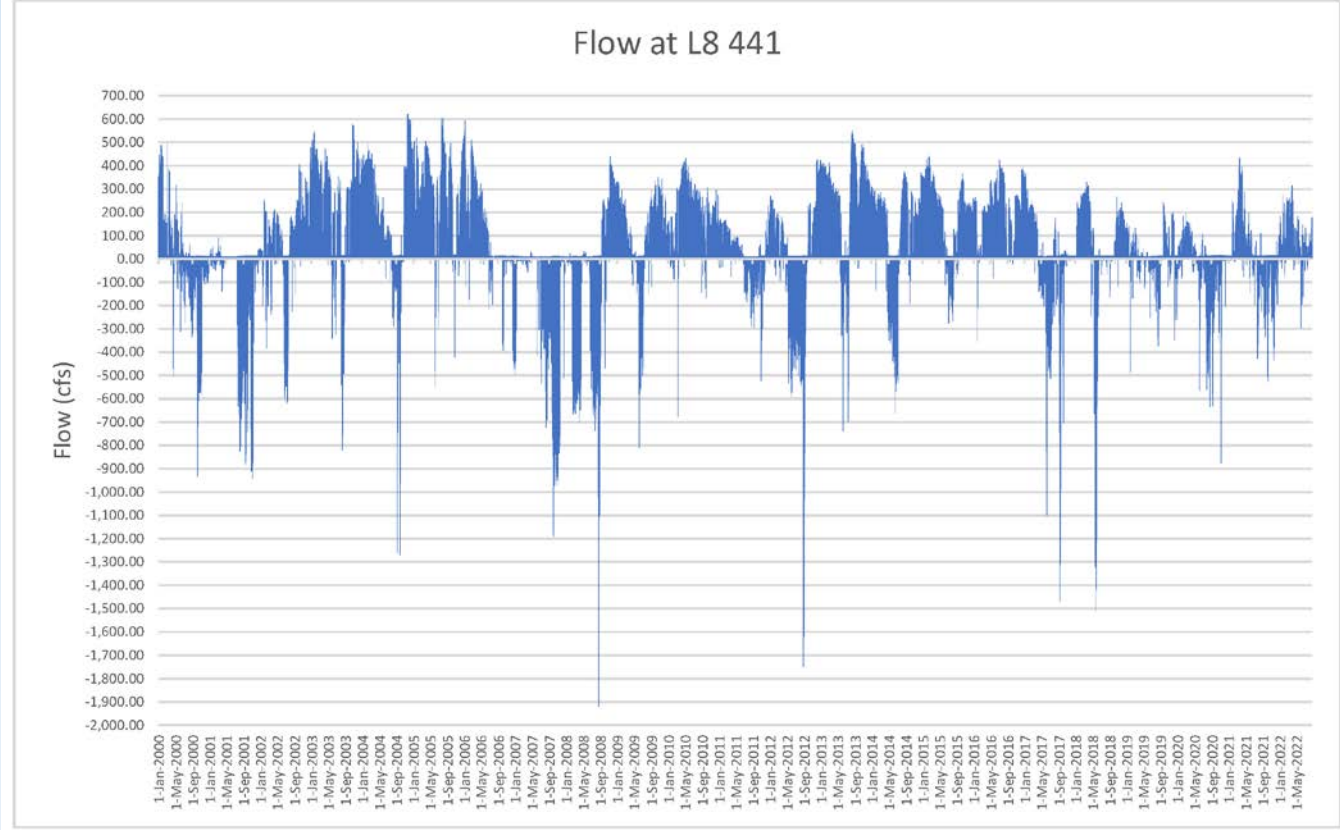
Based on the analysis of flows

- Using the average flow of 49 cfs, Phase I of the reclaimed mine can retain approximately +/- 115 days of the entire flow out of Lake Okeechobee into the L-8 canal to a reclaimed lake elevation of 13 feet NAVD 88.

- Under maximum flow conditions, (662 cfs) approximately +/- 8 days of the entire flow out of Lake Okeechobee can be placed into the reclaimed mine.



Negative flows represent flow toward Lake Okeechobee and positive flows represent flow from Lake Okeechobee CHART B

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Operational Mode 1
Lake Okeechobee regulatory releases

The Reclamation Lakes water storage as measured from the normal pool elevation of 8 feet NAVD 88.

- North Cell +/- 221.7 acres
- South Cell +/- 239.2 acres

- Each cell will have a mean depth of approximately 21.7 feet below normal pool and perimeter berms crested at an elevation of 16 feet NAVD 88.

- The total storage capacity of the two cells will be approximately +/- 11,200 acre-feet (ac-ft) to the maximum pool elevation of 13 feet NAVD 88.

- The South Cell will include an inflow spillway, an outflow spillway or pump station and a divide between the North and South Cells, which is an FP&L powerline ROW.

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Operational Mode 2
Lake Okeechobee water supply releases

The Mode 2 Lake Okeechobee water supply releases operational scenario where the L-8 Canal is used to convey water through the L-8 Canal is as described for Operational Mode 1.

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Operational Mode 3
L-8 Canal flood control releases

- When the L-8 Canal stage exceeds a stage threshold of approximately 16 feet NGVD 88, the reclaimed lakes can relieve the high L-8 Canal stages.

- The maximum flow into Lake Okeechobee during these events is shown to be 1620 cfs.

- Based on the historic maximum inflow to Lake Okeechobee of 1620 cfs, the reclaimed mine can retain approximately ½ day of the entire flow toward Lake Okeechobee into the L-8 canal to a reclaimed lake elevation of 13 feet NAVD 88.

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Conclusions

It is conceptually feasible to use Phase I of the reclaimed Five Stones Quarry as a Flow Equalization Basin for the L8 Canal

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Mayaca Materials Request Concerning This Proposal

Provide written concurrence with the proposal (at least in concept) in order that permitting of Phase I can proceed with Palm Beach County

MAYACA MATERIALS