ATTACHMENT "A"

Etienne Bejarano

From: Peter Olmedo <POlmedo@valleycrest.com>
Sent: Monday, June 22, 2015 12:41 PM
To: Etienne Bejarano
Cc: Tracy Bradley
Subject: Follow up on Dr. Busey's report

Hello ET,
I have reviewed Dr. Busey's report and concur with his recommendations. I would also recommend starting the re sodding process as soon as possible so that the new turf has a longer time period to establish while the park is closed. Please advise how would you like to proceed.

Best Regards,

Peter Olmedo
Account Manager

ValleyCrest **Landscape Maintenance**
8191 NW 84th St.
Medley, FL 33166

Tel: 305-989-3924
Fax: 305-863-0255
E-mail: *Polmedo@valleycrest.com*

www.valleycrest.com

Cutler Ridge Park
10100 SW 200 ST
Cutler Bay, FL 33189
Sod Replacement Project
(75,000 sq. feet)

Bel Aire Park
18500 SW 97 AVE
Cutler Bay, FL 33189
Sod Replacement Project
(20,000 sq. feet)

Cutler Bay Fields
Agronomy Report by
Dr. Phil Busey, CCA, CPAg[1]

June 5, 2015

Dr. Phil Busey, CCA, CPAg
(954) 579-3932
phil@philbusey.com
Science solving problems
Soils, plants, water, environment, planning, production, management
Phil Busey Agronomy Consulting Inc.
837 SW 120th Way. Davie, FL 33325

As an independent consultant, on May 19, 2015, from 9:00 am until 12:00 pm, and on May 22 from 1:45 pm until 3:30 pm, I visited and inspected five selected sports turf fields in the Town of Cutler Bay, accompanied by staff representing ValleyCrest Landscape Maintenance. While there, I collected soil samples which I submitted for chemical and physical analyses (Table 1) by Brookside Laboratories of New Bremen, Ohio. Brookside is accredited for soil and other tests by several national and state certifying programs including the American Association for Laboratory Accreditation (A2LA) and the USGA Green Section Proficiency Testing Program and does tests referenced by ASTM International.

ValleyCrest staff, who maintain the fields, explained concerns regarding turf performance, weeds, drainage, and wear issues and outlined sports turf maintenance practices including mowing, irrigation, fertilization, and pest management. Because the Cutler Ridge Park large field (in the southwest) was in very bad shape, a large soil sample was obtained by which a complete physical analysis and report was prepared by Brookside including saturated hydraulic conductivity and macropore (air-filled) pore space. Soil samples of all five fields were analyzed for plant nutrients using the Mehlich III extraction and were analyzed for particle size distribution including sieved sand particle sizes. I also conducted two measurements of infiltration rate using the Mascaro infiltrometer which is not an ASTM procedure. Soil chemical and physical analyses were compared with my recommendations adapted from different sources.[2] Irrigation was run for me to observe at Bel Aire and Cutler Ridge Park Large Field.

1. **Cutler Ridge Park Large Field**
   Soil was severely unacceptable for growing sports turf with a high amount of silt, 34.7% which is extremely unusual for South Florida. It is possible that this soil was not mined but was a byproduct of water treatment or other industrial processes. Bulk density was also very low which gave this soil a feeling of softness and is also unusual for a mineral soil. As a result of excessive total fines, 45.5%, saturated hydraulic conductivity was less than 1 inch per hour and macropore (air-filled pore) capacity was less than 5%. Infiltration tests at two locations showed infiltration rates of 3.00 and 0.49 inches per hour, respectively. In high traffic areas both goosegrass and bermudagrass turf had been removed (Fig. 1) due to soccer traffic and in low traffic areas there were abundant goosegrass plants (Fig. 2). Basically this soil is not readily manageable for turf.

---

[1] Certified Crop Adviser and Certified Professional Agronomist and member of Brookside Society of Professional Consultants. Information in this report is a guidance and general recommendation, and is not supervisory.

[2] McCarty, Bert, et al. 2005. Designing, constructing, and maintaining bermudagrass sports fields, Clemson University; Stowell, L. J., et al. 2014. Only what the turf needs: Updating the minimal levels for sustainable nutrition (MLSN) guidelines. Abstract 398-5 of Division C05 Turfgrass Science, Crop Science Society of America; Carrow, R. N., et al., Clarifying soil testing: III. SLAN sufficiency ranges and recommendations. Golf Course Manage. January 2004, pp. 194-198; United States Golf Association Green Section Staff. 2004. USGA Recommendations for a method of putting green construction, 11 p.

Irrigation provided excellent coverage and ran at 65 to 75 psi depending on the type of sprinkler head, which was mixed between Rainbird 6504 with dark blue nozzles and Hunter I-40 heads. As explained in Fig. 3, Hunter I-40 heads with dark blue (25) nozzles at 70 psi are reported by the manufacturer to deliver 0.50 inches per hour on square spacing of 68 feet; thus for the actual spacing estimated precipitation rate is 0.62 inches per hour which should be distributed uniformly. The estimated precipitation rate of 0.62 inches per hour should help guide irrigation times to compensate for evapotranspiration.

2. **Cutler Ridge Park MVF (Michael Vaughn Field)**
While there are potential water infiltration problems due to a high amount of very fine sand, MVF soil is generally suitable for growing bermudagrass turf (Fig. 4). There was severe localized wear on the northwest corner of the field near street lights which reportedly fostered night play from the neighborhood (Fig. 5). Historical observations from Google Earth indicate that irrigation may not be uniform (Fig. 6) and after reading the next section it is possible to see how good irrigation coverage does not necessarily go along with uniformity.

3. **Bel Aire Field**
Soil was severely unacceptable for growing sports turf with a high amount of total fines, 32%. Although a complete physical analysis was not performed, this soil fails even a relaxed 60% standard for coarse + medium + fine sand particle sizes by volume and will necessary drain very poorly. The field was covered with goosegrass plants (Fig. 8). Irrigation coverage was good (Fig. 7), but pressure was low, 27 psi to 33 psi depending on the type of sprinkler head, Hunter SS I-38 or Hunter I-40 or Rainbird 6504 Falcon heads. While this field should be resodded within the hash marks, it will always be difficult to manage and it appears from Google Earth imager (Fig. 9) that even though irrigation coverage is good, there were dark green areas on April 27, 2014, consistent with poor irrigation uniformity. Sprinkler head nozzles in this field should be replaced to smaller nozzles to reduce flow and hopefully reduce main line friction loss thereby bringing up the pressure and obtaining higher uniformity. The appearance of good head-to-head coverage is entirely deceptive when the pressure is so low.

4. **Lakes by the Bay Football Field #4**
The field showed excellent turf performance (Fig. 10) which was consistent with the generally suitable soil physical properties. There were sand blowouts or "bowls" at the southwest corner near a bandit parking area (Fig. 11) and at the northwest corner. It seemed from the soil probe that there may have been a lighter consistency of the soil, that is, it might have been more sandy in these blowout areas, however their location was more likely indicative of localized wear. This was verified by examination of Google Earth imagery (Fig. 12) from January 18, 2014 which showed these "bowls" or blowouts were associated with the south soccer goals, thus clearly traffic related.

5. **Lakes by the Bay Baseball Field #3**
The field showed excellent turf performance (Fig. 13) which was explained by generally suitable physical properties. There were some weeds such as bahiagrass that would normally be controlled by sulfonylurea family herbicides, so these herbicides such as metsulfuron and sulfosulfuron that are often used for broadleaf weed control and sedge control, respectively, may be an occasional alternative to 3-way products containing 2,4-D and related chemicals (which has been effective against spurges, Fig. 14).

Recommendations

6. **Soil physical limitations**
   Everyone should realize that both Cutler Ridge Park Large Field and Bel Aire Field are too poor in their soil characteristics to be able to produce suitable sports turf on a consistent basis. Frequent (at least 4 times per year) vertical core cultivation may assist, along with restrictions on traffic. Google Earth images show often good quality turf from 2009 to 2014, but it is not clear if this is overseeded ryegrass or at a time when there was little traffic.

7. **Soil chemistry and fertilization**
   There are localized soil nutrient problems, particularly the near total lack of phosphorus at Cutler Ridge Park Large Field, and other localized problems with potassium, magnesium, and manganese which can be adjusted upward with different fertilizer analyses. Problems with the insufficiency of potassium and magnesium are common in South Florida particularly on highly calcareous sandy soil, which these soils are. The Mehlich III extraction of calcium at Bel Aire Field and Cutler Ridge Park Large Field, values for Ca at 20,921 and 22,296 ppm, respectively, are spurious high values expected at high soil pH where calcium swamps all the other cations and causes overestimates in exchange capacity. The extremely high calcium reading indicates that ammonium acetate would be a more suitable extractant. However, based on my experience, this high calcium content also shows that these fields have enormous buffering capacity will not be amenable to acidification (pH reduction).

   High and consistent rates of nitrogen fertilization concentrated in the growing season are the main way to grow healthy bermudagrass sports turf. (Baseball fields, however, may overgrow and require verticutting at excessive nitrogen fertilization.) Manganese is normally poorly available under high soil pH, even if manganese is present, and since most of these soils have too high a buffering capacity due to high calcium, foliar feeding with manganese may be appropriate to try to improve turf color. So in summary, except for the insufficient phosphorus at Cutler Ridge Park Large Field, the main emphasis should be on constant N fertilization.

8. **Traffic**
   Repeatedly, much of the other problems of these fields appears to be due to unregulated traffic and normally intensive wear associated with overuse under certain sports such as football and soccer. The near total removal of bermudagrass turf in some areas is related to the areas that these sports are played.

9. **Mowing and Irrigation**
   My understanding is that fields are mown twice per week, which is good. Irrigation appears to be adequate or excessive and coverage appears to be very good which deceptive because pressure is poor in some areas such as Bel Aire. The Hunter I-40 sprinkler heads with dark blue (25) nozzles have a minimum pressure requirement of 60 psi and 59 feet between heads. Actual pressure at the nozzles was 27 psi to 33 psi with 39 foot distance between heads, so a replacement to smaller nozzles is compatible with these heads and will result in much smaller flow, better pump performance and higher pressure, and still provide adequate head-to-head coverage.

10. **Pest management**
    Based on comments in oral interviews, ValleyCrest is doing very careful and knowledgeable pest management including weed control. The use of Revolver + Sencor herbicides, with two applications 7 days apart, is the surest method to control small to medium sized adult goosegrass plants. Revolver is extremely expensive so ways of using it as a spot treatment or the selective (spot) use of nonselective herbicide glyphosate may make more sense for distantly spaced goosegrass plants. Blanket application of preemergence herbicides up to five times per year may provide the coverage necessary to prevent mature goosegrass plants from developing.

11. **Other cultural management**
    I was also asked about the possible benefit of verticutting Cutler Ridge MVF. My answer was that gentle verticutting may help smooth the field and stimulate growth but is probably not necessary so early. With any kind of cultural management and this include aerification (core cultivation) one should be quite careful to have a goosegrass response plan in place in case there is a sudden infestation either from the disruption of the preemergence blanket, the uplifting of buried goosegrass seed, or the exposure of the soil under the bermudagrass canopy.

Summary

ValleyCrest and the Town of Cutler Bay should not give up on Cutler Ridge Large Field or Bel Aire, but realize that it will always be extremely difficult maintain turf on these fields with excessive fine soil particle except with traffic management. Normally 800 hours per use per year are considered the upper limit for sports use of bermudagrass. But because these fields are poorly drained due to very poor soil, there will be additional times that traffic must be prevented otherwise severe compaction will occur. Core cultivation with a vertical tine aerifier (not a drum aerifier) at least four times per year may help extend the use time, but never to exceed 800 hours per year under any circumstance.

If intensive core cultivation and strict traffic management cannot bring back Cutler Ridge Large Field, a renovation plan should be considered that may involve capping with 3 to 6 inches of properly sized and tested sand rootzone mix prepared off-site, and crowning may also be considered.

There should be slight adjustment in herbicide use in all fields to include more preemergence herbicide applications to prevent goosegrass and reduce postemergence herbicide use. There shoud be consideration of use of more sulfonylurea herbicides such as metsulfuron, sulfosulfuron, and halosulfuron for broadleaf and sedge weed control and secondary control of bahiagrass.

However, seashore paspalum turfgrass which has come in as weed at MVF will be damaged by sulfonylurea family herbicides, and there is an interesting possibility as well as this turf is doing that it should be preserved in areas where it occurs and even expanded.

As explained above, fertilization is generally on target though phosphorus is insufficient at Cutler Ridge Park Large Field, and N fertilization of all fields except baseball fields should be heavy and continuous with heaviest concentration during the months of most active bermudagrass growth.

There is evidence from Google Earth imagery and on-the-ground measurements that while irrigation coverage is generally good, sprinkler heads are providing poor uniformity because they are operating at too low pressure. This can be alleviated by replacing nozzles to a smaller size, which will reduce flow, reduce friction loss, increase pressure, and provide closer-to-manufactured sprinkler head radii.

Table 1. Comparative summary of Town of Cutler Bay sports turf soil chemical and physical analyses. In the opinion of Phil Busey, cells marked in red are severely unacceptable and cells in yellow are marginally acceptable and should be corrected when possible.

Location abbreviation	CBAY LBTB3	CBAY LBTB4	CBAY BELAIRE	CBAY CR MVF	CBAY CR LG FIELD	
Extended description	Lakes by the Bay Baseball Field #3	Lakes by the Bay Football Field #4	Bel Aire Field	Cutler Ridge Park MVF (Michael Vaughn Field, east)	Cutler Ridge Park Large Field (southwest)	
Latitude, longitude	25.565304, -80.328899	25.564932, -80.327563	25.597389, -80.349294	25.580512, -80.354917	25.579724, -80.356704	
Lab number	0803-1	0804-1	0805-1	0806-1	0807-1	Recommended
Exchange capac.	6.75	50.04	110.02	10.74	117.27	> 4
pH	7.5	7.5	[illegible]	7.5	[illegible]	< 7.5
OM %	1.40	1.62	2.90	2.14	3.23	< 4.00%
Following values ppm for nutrient and other elements						
S	37	29	26	18	37	> 7
P (Mehlich III)	41	6	8	22	[illegible]	> 21
Ca	1150	9294	20921	1937	22296	> 331
Mg	66	163	136	45	141	> 47
K	25	25	64	39	70	> 37
Na	28	46	35	37	50	< 110
B	0.71	0.56	0.60	0.92	0.87	> 0.40
Fe	92	30	52	76	46	> 100
Mn	23	9	11	32	8	> 35
Cu	1.12	0.81	1.7	1.14	1.23	> 0.10, < 2.50
Zn	3.17	2.21	14.08	2.66	8.06	> 1.00, < 4.00
Al	105	9	8	52	5	
Following values % except for K_{sat}						
OM (again)	1.87	1.78	2.93	2.42	3.65	
Fine gravel	0.8	1.6	8.8	2.6	1.8	< 10
Very coarse sand	3.5	3.7	3.8	1.3	4.8	< 10
Coarse sand	22.2	17.2	12.8	16.0	14.9	> 35
Medium sand	39.1	35.6	[illegible]	30.8	[illegible]	> 50 (30)
Fine sand	25.9	27.3	19.9	25.7	14.9	< 25
C + M + F sand	87.2	80.1	[illegible]	72.5	[illegible]	> 80 (60)
Very fine sand	6.3	10.4	[illegible]	[illegible]	5.4	< 10
Silt	1.3	3.4	[illegible]	4.6	[illegible]	< 5
Clay	0.9	0.9	4.0	0.9	5.4	< 3
Sum of fines	8.5	14.7	[illegible]	23.7	[illegible]	< 10
Macropores					[illegible]	> 15
K_{sat}					[illegible]	> 6 in/hr
Following value dimensionless						
Bulk density					[illegible]	> 1.2, < 1.6

Fig. 1. Cutler Ridge Park large field (southwest) showing severe loss of turf near goal.

Fig. 2. Cutler Ridge Park large field (southwest) showing abundance of goosegrass, a weed, and Mascaro soil infiltrometer.

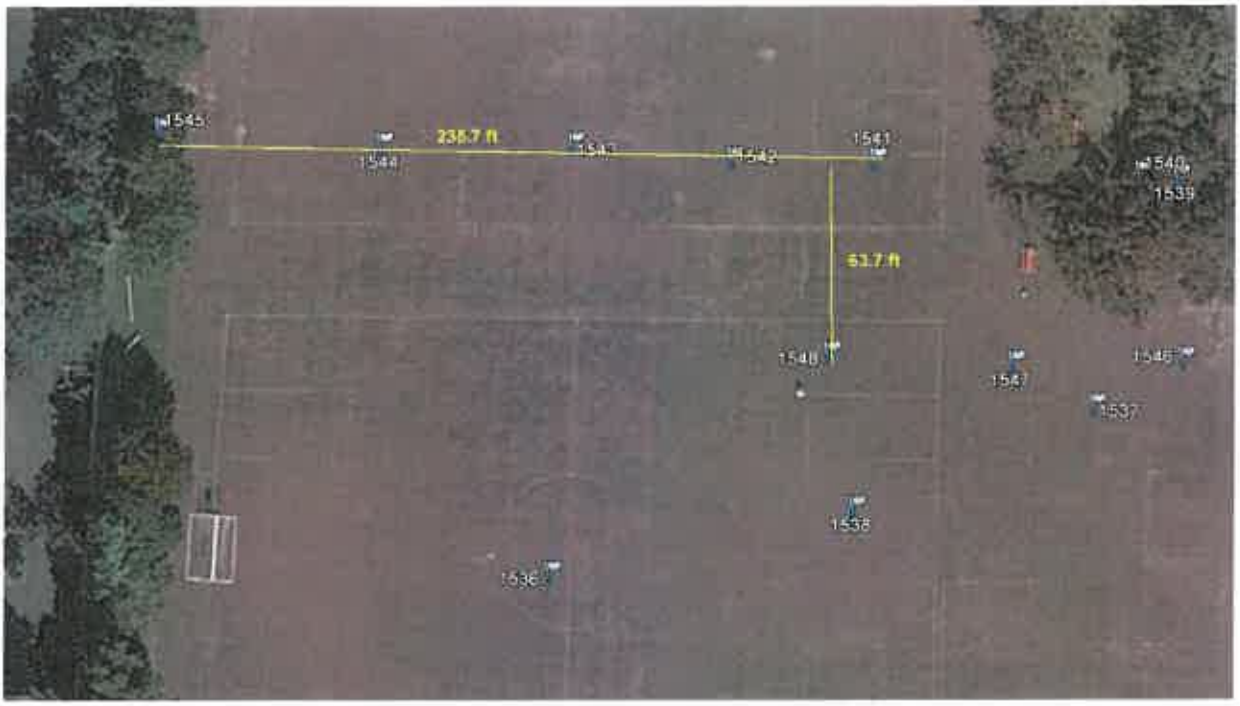

Fig. 3. Cutler Ridge Park large field (southwest) showing from GPS waypoints that sprinklers are 58.9 ft x 63.7 ft apart which for Hunter I-40 heads with dark blue (25) nozzles at 70 psi deliver 0.50 inches per hour on square spacing of 68 feet; estimated actual precipitation rate is 0.62 inches per hour.

Fig. 4. Cutler Ridge Park Michael Vaugh Field (MVF) showing generally good turf conditions in a generally suitable soil. There is localized infestation by seashore paspalum, a somewhat desirable turfgrass.

Fig. 5. Cutler Ridge Park Michael Vaugh Field (MVF) showing generally good turf conditions in a generally suitable soil. There is wear damage in the center of the field and near goals and in the northwest corner (left background).

Fig. 6. Cutler Ridge Park Michael Vaugh Field (MVF) Google Earth view of April 27, 2014 showing green areas probably due to inadequate sprinkler head distribution, apparent spacing of 51.4 feet.

Fig. 7. Bel Aire Field showing good irrigation coverage due to close spacing of sprinkler heads, 39 feet, despite inadequate pressure, 27 psi to 33 psi. At such low pressure good coverage does not equate to uniformity.

Fig. 8. Bel Aire Field showing largely goosegrass and complete removal of bermudagrass due to traffic within the hash lines (right side in this view).

Fig. 9. Bel Aire Field Google Earth view of April 27, 2014 showing green areas probably due to inadequate sprinkler head distribution. Poor uniformity can exist with good coverage because the pressure is lower than design pressure.

Fig. 10. Lakes by the Bay multipurpose field #4 showing excellent turf coverage in a generally suitable soil. There was little torpedograss in some areas, but tropical signalgrass may be the most threatening weed. There is some algae crust suggesting that irrigation can be cautiously reduced.

Fig. 11. Lakes by the Bay multipurpose field #4 showing sandy blowouts or "bowls" due to excessive play in the southwest corner near a bandit parking area.

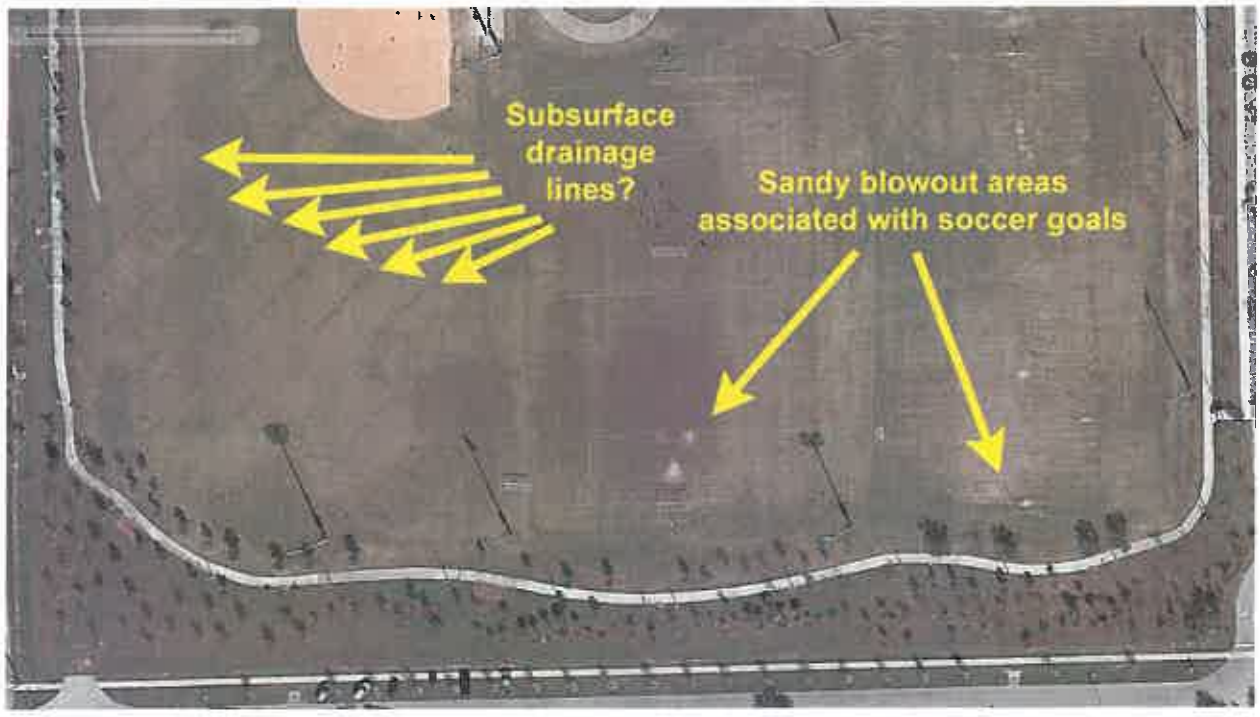

Fig. 12. Lakes by the Bay multipurpose field #4 on January 18, 2014, showing sandy blowouts located at former soccer field goals near the bandit parking on the south side but not on the north side; image also shows some residual effect from possible subsurface drain lines.

Fig. 13. Lakes by the Bay baseball field #3 showing generally excellent sports turf with some weed problems, mostly spurge, seashore paspalum, and bahiagrass.

Fig. 14. Lakes by the Bay baseball field #3 showing the positive effect of a 3-way herbicide in killing spurge.

Fig. 15. Lakes by the Bay fields showing topdressing operation on December 15, 2014. This is a very expensive operation and it may not continue to provide economic benefit once fields are level and well established.

lb/A

BROOKSIDE LABORATORIES, INC.

74178-1

SOIL AUDIT AND INVENTORY REPORT

Name ValleyCrest City Medley State FL

Independent Consultant Philip Busey Date 5/28/2015

Sample Location	CBAY LBTB3		042				
Sample Identification			001				
Lab Number			0803-1				
Total Exchange Capacity (ME/100 g)			6.75				
pH (H_2O 1:1)			a 7.5				
Organic Matter (humus) %			1.40				
Estimated Nitrogen Release		lb/A	48				
ANIONS	SOLUBLE SULFUR*	ppm	37				
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	188				
		ppm of P	41				
	BRAY II	lb/A P as P_2O_5	403				
		ppm of P	88				
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	2300				
		ppm	1150				
	MAGNESIUM*	lb/A	132				
		ppm	66				
	POTASSIUM*	lb/A	50				
		ppm	25				
	SODIUM*	lb/A	56				
		ppm	28				
BASE SATURATION PERCENT							
Calcium		%	85.19				
Magnesium		%	8.15				
Potassium		%	0.95				
Sodium		%	1.80				
Other Bases		%	3.90				
Hydrogen		%	0.00				
EXTRACTABLE MINORS							
Boron* (ppm)			0.71				
Iron* (ppm)			92				
Manganese* (ppm)			23				
Copper* (ppm)			1.12				
Zinc* (ppm)			3.17				
Aluminum* (ppm)			105				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

a - alkaline soil

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

74178-1

SOIL AUDIT AND INVENTORY REPORT

Name ValleyCrest City Medley State FL

Independent Consultant Philip Busey Date 5/28/2015

Sample Location	CBAY LBTB4		042				
Sample Identification			002				
Lab Number			0804-1				
Total Exchange Capacity (ME/100 g)			50.04				
pH (H_2O 1:1)			a 7.5				
Organic Matter (humus) %			1.62				
Estimated Nitrogen Release		lb/A	52				
ANIONS	SOLUBLE SULFUR*	ppm	29				
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	27				
		ppm of P	6				
	BRAY II	lb/A P as P_2O_5	169				
		ppm of P	37				
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	18588				
		ppm	9294				
	MAGNESIUM*	lb/A	326				
		ppm	163				
	POTASSIUM*	lb/A	50				
		ppm	25				
	SODIUM*	lb/A	92				
		ppm	46				
BASE SATURATION PERCENT							
Calcium	%		92.87				
Magnesium	%		2.71				
Potassium	%		0.13				
Sodium	%		0.40				
Other Bases	%		3.90				
Hydrogen	%		0.00				
EXTRACTABLE MINORS							
Boron* (ppm)			0.56				
Iron* (ppm)			30				
Manganese* (ppm)			9				
Copper* (ppm)			0.81				
Zinc* (ppm)			2.21				
Aluminum* (ppm)			9				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

a - alkaline soil

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

74178-1

SOIL AUDIT AND INVENTORY REPORT

Name ValleyCrest City Medley State FL

Independent Consultant Philip Busey Date 5/28/2015

Sample Location	CBAY BELAIRE		042				
Sample Identification			003				
Lab Number			0805-1				
Total Exchange Capacity (ME/100 g)			110.02				
pH (H_2O 1:1)			a 7.8				
Organic Matter (humus) %			2.90				
Estimated Nitrogen Release		lb/A	78				
ANIONS	SOLUBLE SULFUR*	ppm	26				
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	37				
		ppm of P	8				
	BRAY II	lb/A P as P_2O_5	< 5				
		ppm of P	< 1				
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	41842				
		ppm	20921				
	MAGNESIUM*	lb/A	272				
		ppm	136				
	POTASSIUM*	lb/A	128				
		ppm	64				
	SODIUM*	lb/A	70				
		ppm	35				
BASE SATURATION PERCENT							
Calcium	%		95.08				
Magnesium	%		1.03				
Potassium	%		0.15				
Sodium	%		0.14				
Other Bases	%		3.60				
Hydrogen	%		0.00				
EXTRACTABLE MINORS							
Boron* (ppm)			0.60				
Iron* (ppm)			52				
Manganese* (ppm)			11				
Copper* (ppm)			1.70				
Zinc* (ppm)			14.08				
Aluminum* (ppm)			8				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

a - alkaline soil

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

74178-1

SOIL AUDIT AND INVENTORY REPORT

Name ValleyCrest City Medley State FL

Independent Consultant Philip Busey Date 5/28/2015

Sample Location CBAY CR MVF		042				
Sample Identification		004				
Lab Number		0806-1				
Total Exchange Capacity (ME/100 g)		10.74				
pH (H_2O 1:1)		a 7.5				
Organic Matter (humus) %		2.14				
Estimated Nitrogen Release	lb/A	63				
ANIONS — SOLUBLE SULFUR*	ppm	18				
ANIONS — PHOSPHORUS — MEHLICH III	lb/A P as P_2O_5	101				
	ppm of P	22				
ANIONS — PHOSPHORUS — BRAY II	lb/A P as P_2O_5	362				
	ppm of P	79				
ANIONS — PHOSPHORUS — OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS — CALCIUM*	lb/A	3874				
	ppm	1937				
EXCHANGEABLE CATIONS — MAGNESIUM*	lb/A	90				
	ppm	45				
EXCHANGEABLE CATIONS — POTASSIUM*	lb/A	78				
	ppm	39				
EXCHANGEABLE CATIONS — SODIUM*	lb/A	74				
	ppm	37				
BASE SATURATION PERCENT						
Calcium %		90.18				
Magnesium %		3.49				
Potassium %		0.93				
Sodium %		1.50				
Other Bases %		3.90				
Hydrogen %		0.00				
EXTRACTABLE MINORS						
Boron* (ppm)		0.92				
Iron* (ppm)		76				
Manganese* (ppm)		32				
Copper* (ppm)		1.14				
Zinc* (ppm)		2.66				
Aluminum* (ppm)		52				
OTHER TESTS — Soluble Salts (mmhos/cm)						
OTHER TESTS — Chlorides (ppm)						

a - alkaline soil

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

74178-1

SOIL AUDIT AND INVENTORY REPORT

Name ValleyCrest City Medley State FL

Independent Consultant Philip Busey Date 5/28/2015

Sample Location	CBAY CR LG FIELD		042				
Sample Identification			005				
Lab Number			0807-1				
Total Exchange Capacity (ME/100 g)			117.27				
pH (H_2O 1:1)			a 7.8				
Organic Matter (humus) %			3.23				
Estimated Nitrogen Release		lb/A	82				
ANIONS	SOLUBLE SULFUR*	ppm	37				
ANIONS / PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	9				
		ppm of P	2				
	BRAY II	lb/A P as P_2O_5	< 5				
		ppm of P	< 1				
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	44592				
		ppm	22296				
	MAGNESIUM*	lb/A	282				
		ppm	141				
	POTASSIUM*	lb/A	140				
		ppm	70				
	SODIUM*	lb/A	100				
		ppm	50				
BASE SATURATION PERCENT							
Calcium	%		95.06				
Magnesium	%		1.00				
Potassium	%		0.15				
Sodium	%		0.19				
Other Bases	%		3.60				
Hydrogen	%		0.00				
EXTRACTABLE MINORS							
Boron* (ppm)			0.87				
Iron* (ppm)			46				
Manganese* (ppm)			8				
Copper* (ppm)			1.23				
Zinc* (ppm)			8.06				
Aluminum* (ppm)			5				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

a - alkaline soil

* Mehlich III Extractable

BROOKSIDE LABORATORIES, INC.
GEOTECHNICAL DIVISION
NEW KNOXVILLE, OH 45871

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number: 74178

Date Received/Started : 5/26/2015
Date Completed/Reported: 5/29/2015

Submitted By: Philip Busey

Lab Number				0001
Sample Description				CBAY LBTB3 042 001
Sample Condition	XX	Normal	___	Other (see comments)

Method References

ASTM F1632
ASTM F1647 - Method A

ACCREDITED
Geotechnical
(Putting Green Materials)
Certificate Number: 736.01

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number : 74178
** Date of Analysis **
Start Date : 5/26/2015
Completed : 5/29/2015

Submitted By: Philip Busey

Reviewed by: Jackie Brackman

Lab Number	0001
Sample Description	CBAY LBTB3
	042
	001

Particle Size Analysis

*Clay	<.002mm	%	0.90
Silt	.002mm - .05mm	%	1.30
Sand	.05mm - 2.00mm	%	97.0
Gravel	> 2.0mm	%	0.8

Org Mat (360 deg C ash)	1.87

Sand Fractions

Sieve Size #	mm		% Retained
10 -	2.0	Fine Gravel	0.8
18 -	1.0	Very Coarse Sand	3.5
35 -	.500	Coarse Sand	22.2
60 -	.250	Medium Sand	39.1
100 -	.150	Fine Sand	25.9
140 -	.106	Very Fine Sand	5.0
270 -	.053	Very Fine Sand	1.3

BROOKSIDE LABORATORIES, INC.
GEOTECHNICAL DIVISION
NEW KNOXVILLE, OH 45871

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number: 74178

Date Received/Started : 5/26/2015
Date Completed/Reported: 5/29/2015

Submitted By: Philip Busey

Lab Number				0002
Sample Description				CBAY LBTB4 042 002
Sample Condition	XX	Normal	___	Other (see comments)

Method References

ASTM F1632
ASTM F1647 - Method A

ACCREDITED
Geotechnical
(Putting Green Materials)
Certificate Number: 736.01

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number : 74178
** Date of Analysis **
Start Date : 5/26/2015
Completed : 5/29/2015

Submitted By: Philip Busey

Reviewed by: Jackie Brackman

Lab Number	0002
Sample Description	CBAY LBTB4
	042
	002

Particle Size Analysis

*Clay	<.002mm	%	0.90
Silt	.002mm - .05mm	%	3.40
Sand	.05mm - 2.00mm	%	94.1
Gravel	> 2.0mm	%	1.6

Org Mat (360 deg C ash)	1.78

Sand Fractions

Sieve Size #	mm		% Retained
10 -	2.0	Fine Gravel	1.6
18 -	1.0	Very Coarse Sand	3.7
35 -	.500	Coarse Sand	17.2
60 -	.250	Medium Sand	35.6
100 -	.150	Fine Sand	27.3
140 -	.106	Very Fine Sand	7.6
270 -	.053	Very Fine Sand	2.8

* NON A2LA ACCREDITED

BROOKSIDE LABORATORIES, INC.
GEOTECHNICAL DIVISION
NEW KNOXVILLE. OH 45871

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number: 74178

Date Received/Started : 5/26/2015
Date Completed/Reported: 5/29/2015

Submitted By: Philip Busey

Lab Number				0003
Sample Description				CBAY BELAIRE 042 003
Sample Condition	XX	Normal	__	Other (see comments)

Method References

ASTM F1632
ASTM F1647 - Method A

ACCREDITED
Geotechnical
(Putting Green Materials)
Certificate Number: 736.01

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number : 74178
** Date of Analysis **
Start Date : 5/26/2015
Completed : 5/29/2015

Submitted By: Philip Busey

Reviewed by: Jackie Brackman

Lab Number	0003
Sample Description	CBAY BELAIRE
	042
	003

Particle Size Analysis

*Clay	<.002mm	%	4.00
Silt	.002mm - .05mm	%	12.30
Sand	.05mm - 2.00mm	%	74.9
Gravel	> 2.0mm	%	8.8

Org Mat (360 deg C ash)	2.93

Sand Fractions

Sieve Size #	mm		% Retained
10 -	2.0	Fine Gravel	8.8
18 -	1.0	Very Coarse Sand	3.8
35 -	.500	Coarse Sand	12.8
60 -	.250	Medium Sand	22.7
100 -	.150	Fine Sand	19.9
140 -	.106	Very Fine Sand	10.9
270 -	.053	Very Fine Sand	4.8

* NON A2LA ACCREDITED

BROOKSIDE LABORATORIES, INC.
GEOTECHNICAL DIVISION
NEW KNOXVILLE, OH 45871

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number: 74178

Date Received/Started : 5/26/2015
Date Completed/Reported: 5/29/2015

Submitted By: Philip Busey

Lab Number				0004
Sample Description				CBAY CR MVF 042 004
Sample Condition	XX	Normal	__	Other (see comments)

Method References

ASTM F1632
ASTM F1647 - Method A

ACCREDITED
Geotechnical
(Putting Green Materials)
Certificate Number: 736.01

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number : 74178
** Date of Analysis **
Start Date : 5/26/2015
Completed : 5/29/2015

Submitted By: Philip Busey

Reviewed by: Jackie Brackman

Lab Number	0004
Sample Description	CBAY CR MVF
	042
	004

Particle Size Analysis

*Clay	<.002mm	%	0.90
Silt	.002mm - .05mm	%	4.60
Sand	.05mm - 2.00mm	%	91.9
Gravel	> 2.0mm	%	2.6

Org Mat (360 deg C ash)	2.42

Sand Fractions

Sieve Size #	mm		% Retained
10 -	2.0	Fine Gravel	2.6
18 -	1.0	Very Coarse Sand	1.3
35 -	.500	Coarse Sand	16.0
60 -	.250	Medium Sand	30.8
100 -	.150	Fine Sand	25.7
140 -	.106	Very Fine Sand	13.0
270 -	.053	Very Fine Sand	5.2

* NON A2LA ACCREDITED

BROOKSIDE LABORATORIES, INC.
GEOTECHNICAL DIVISION
NEW KNOXVILLE, OH 45871

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number: 74178

Date Received/Started : 5/26/2015
Date Completed/Reported: 6/1/2015

Submitted By: Philip Busey

Lab Number		0683
Sample Description		CBAY CR LG FIELD 042 005
Sample Condition	XX Normal	__ Other (see comments)

Method References

ASTM D5550
ASTM F1632
ASTM F1647 - Method A
ASTM F1815
pH NER Bulletin 493

*Reported values are an average of duplicated analysis

ACCREDITED
Geotechnical
(Putting Green Materials)
Certificate Number: 736.01

** PHYSICAL ANALYSIS REPORT **

ValleyCrest
8191 NW 84th Street
Medley, FL 33166

File Number : 74178
** Date of Analysis **
Start Date : 5/26/2015
Completed : 6/1/2015

Submitted By: Philip Busey

Reviewed by: Jackie Brackman

Lab Number		0683
Sample Description		CBAY CR LG FIELD
		042
		005

Particle Size Analysis

Clay <.002mm	%	5.4
Silt .002mm - .05mm	%	34.7
Sand .05mm - 2.00mm	%	58.1
Gravel > 2.0mm	%	1.8
Org Mat (360 deg C ash)		3.65

Sand Fractions

Sieve Size #	mm		% Retained
10 -	2.0	Fine Gravel	1.8
18 -	1.0	Very Coarse Sand	4.8
35 -	.500	Coarse Sand	14.9
60 -	.250	Medium Sand	18.3
100 -	.150	Fine Sand	14.9
140 -	.106	Very Fine Sand	3.9
270 -	.053	Very Fine Sand	1.3

Soil Moisture Measurements

Saturated Conductivity in/hr		< 1.0
30 cm Moist Retention	%	41.3

Soil Pore Space

Air Filled Pore Space	%	5.0
Capillary Pore Space	%	47.3
Total Pore Space	%	52.3

Soil Density

Bulk Density	g/cc	1.15
Particle Density	g/cc	2.40
pH		7.8

VISUAL CLASSIFICATION: Medium sphericity/subangular to subrounded

ValleyCrest
Landscape Maintenance

Date: 5/15/2015

To: Etienne Bejarano

From: Peter Olmedo

Re: Field Conditions at Cutler Ridge Park and Bel Aire Park

Hello Etienne,

I have walked both these fields and feel that there is something more than field use that is causing poor turf conditions. There are several large ware areas and lots of compaction. I have reached out to Dr. Phil Busey which is a local specialist on soils and turf for our region just to get another opinion. I have asked him to perform a complete physical and hydraulic test on these fields. He will come out on 5/19/2015 to perform these tests; he will follow with a report that will show us his findings and what he recommends to better the turf conditions. I will provide you with his repot once he submits it to me for your records.

Thank you,

Peter Olmedo
Account Manager

ValleyCrest
COMPANIES

8191 NW 84th Street
Medley, FL 33166
Cell: 305-989-3924
Office: 305-863-0025
Fax: 305-863-0255