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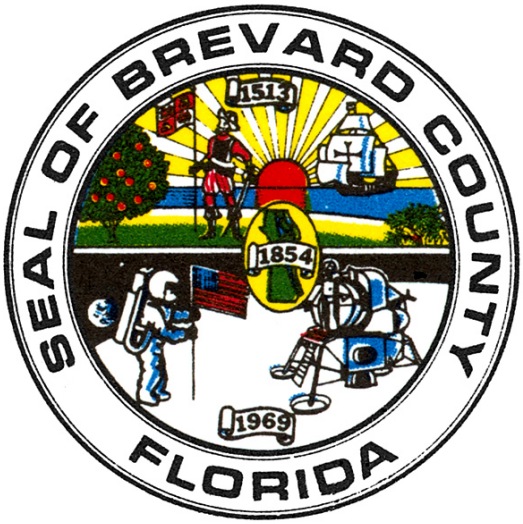

MELBOURNE LANDFILL AND RECYCLING CENTER (AKA FLORIDA RECYCLERS OF BREVARD, LLC) LANDFILL EVALUATION

Brevard County Solid Waste Management Department | June 2018

MELBOURNE LANDFILL AND RECYCLING CENTER
(AKA FLORIDA RECYCLERS OF BREVARD, LLC)
WACS ID 18444

LANDFILL EVALUATION
TASK ORDER 17-01

Prepared for:

Brevard County

Solid Waste Management Department

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EXECUTIVE SUMMARY

The Brevard County Solid Waste Management Department (SWMD) contracted with Jones Edmunds to evaluate the regulatory, economic, and environmental liability of the privately owned and operated Melbourne Landfill and Recycling Center (aka Florida Recyclers of Brevard, LLC). This private facility is adjacent to the County's Sarno Road Class III Landfill and the Sarno Road Transfer Station as shown in Figure 1, Overall Area Plan. The site is permitted by the Florida Department of Environmental Protection (FDEP) as a Construction & Demolition (C&D) debris recycling and disposal and yard trash processing facility.

The goals of this preliminary engineering evaluation are to review the existing design and regulatory conditions of the Florida Recyclers facility and to identify the risks and benefits related to operation of the facility and any further expansion. Jones Edmunds reviewed and evaluated the following:

- Solid Waste Permitting History
- Overall Facility Operations
- Financial Assurance Documentation
- FDEP Environmental Resource Permit (ERP) History
- Permitted Stormwater Management System
- Historical Water Quality and Gas Monitoring Data
- Current Volume and Lifespan Analysis of the Facility
- Valley Fill Expansion Option

This evaluation is based on publically available data and information, and Jones Edmunds used the FDEP Oculus Database and FDEP Water Permitting Portal to obtain historical documentation. This evaluation does not consider permitting documentation that may be maintained by the St. Johns River Water Management District (SJRWMD) for the facility. Jones Edmunds also reviewed the City of Melbourne Conditional Use Permit (CUP) granted for the Sarno Road Class III Landfill and the 2017 aerial topographic survey performed by Pickett and Associates provided by the County. Jones Edmunds understands that the Florida Recyclers facility is also regulated by a City of Melbourne CUP, but a copy of the permit was not available at the time of this review.

The Florida Recyclers of Brevard, LLC is recorded as the owner of two parcels of property[1], approximately 45 acres total, with about 36 acres permitted as disposal area. The facility started operations in 1998 as an unlined C&D debris disposal facility. In 1999, the facility converted to a Class III landfill; and in 2014, the facility filed a permit application requesting classification as a C&D debris and recycling facility. FDEP granted the facility a 10-year operation permit as a C&D facility, but required the site continue to monitor groundwater, surface water, and landfill gas in accordance with Class III landfill guidelines. The 2014 change in designation from a Class III landfill to a C&D debris disposal facility resulted in the facility being required to stop using an escrow account for financial assurance and to pursue to an alternate method. In March 2017 FDEP issued the facility a

[1] Parcel Nos. 27-36-24-00-507 (25.05 acres) and 27-36-24-00-508 (19.7 acres).

Consent Order for failure to provide proof of an alternate financial assurance mechanism (i.e. a trust fund). According to a verbal discussion with FDEP, the site has an approved Trust Fund in place.

The sequence of ERPs for this facility on FDEP databases is incomplete, particularly with regard to property ownership and easements. A complete timeline of the site's stormwater permitting history could not be developed. The February 2000 ERP application included a proposed wetland mitigation plan for parcels purchased for the expansion of the landfill to its current footprint. **Jones Edmunds found documentation confirming the completion of the wetland mitigation activities in August 2001.**

Jones Edmunds compared the 2017 inflated costs against the closure and long-term-care cost estimates for the 2017 Sarno Road Class III Landfill costs, on a cost-per-acre basis. **In our opinion, the cost per acre for closure is low, based on our experience with recent significant increases in construction costs.** In addition, the closure cost estimate is based on a clay-soil final closure system.

The operation permit states that the facility accepts on average 200 tons per day. Based on Solid Waste Quantity Reports submitted over the last 4 years, the site has landfilled approximately 105 tons per day. The facility's primary incoming waste stream is new construction debris and vegetative waste.

Several down-gradient groundwater monitoring wells and shallow surficial wells appear impacted by the facility. The sources of the elevated groundwater monitoring parameters may be attributed to the type of materials processed at the facility and modest management of sediment and erosion control at the site. **There is no evidence of landfill gas migration at the site.**

Our estimate of the remaining lifespan of the 34-acre landfill using Florida Recyclers current landfilling rates is approximately 35 years to its permitted buildout elevation of 104 feet. However, the facility appears to be limited by a City ordinance restricting the buildout elevation to 40 feet above natural grade. Based on this limitation, **the estimated lifespan to a buildout elevation 64 feet is 14 years**.

To obtain additional airspace, Jones Edmunds explored the option of constructing a valley fill expansion to merge the facility with the Sarno Road Class III Landfill. The proposed expansion area would require a 60-mil minimum high-density polyethylene (HDPE) bottom liner and geosynthetic clay liner (GCL) system and a primary leachate collection and removal system. The estimated construction cost of this additional capacity is approximately $300,000 per acre – refer to Section 9, Supplemental Information, for cost information. Assuming Sarno's current landfilling rates, the County could expect to gain approximately 4 to 9 years of additional disposal capacity from the valley fill option. The valley fill airspace, plus remaining capacity at the Florida Recyclers facility, could provide about 8 to 20 years of additional capacity at the Sarno current landfilling rate.

In general, the stormwater system appears to be adequate for the permitted design of the existing facility. The as-built construction should be confirmed. If permitted design conditions change (e.g., valley fill design), the stormwater system and groundwater monitoring network will need to be modified.

Based on our review, the facility appears to be operating in a manner consistent with its permit and applicable regulatory guidelines. Based on our evaluation, the following items were identified and should be given further consideration:

- Jones Edmunds could not confirm that the stormwater system is constructed as designed and permitted.
- The obstacles that the County may face in obtaining a height variance as described in the City of Melbourne CUP for the Sarno Road Landfill are unclear. It would be prudent to review a copy of Florida Recyclers facility's CUP to determine whether a height variance is possible and whether any restrictions have been placed on the facility with regard to dates of closure, or additional operational conditions.
- In Jones Edmunds' experience, unlined disposal facilities exhibit higher environmental risk. The environmental liability of this facility is unclear.
- Evidence of groundwater contamination exists at this facility. The source and long-term risk posed by this evidence may require further evaluation.
- If the County were to pursue the valley fill expansion option, the cost benefit results of constructing the expansion area (including requirements for a bottom liner, leachate collection system, stormwater redesign) compared to the additional capacity obtained for Class III waste disposal may be unfavorable if limited by City restrictions.
- The property could be valuable if the County wanted to pursue the continued operation of the facility as primarily a recycling and yard waste processing center.

1 INTRODUCTION

The Brevard County Solid Waste Management Department (SWMD) contracted with Jones Edmunds to evaluate the regulatory, economic, and environmental status of the privately owned and operated Melbourne Landfill and Recycling Center (aka Florida Recyclers of Brevard, LLC). This privately owned facility is at 3351 Sarno Road, Melbourne, Florida, adjacent to the County's Sarno Road Class III Landfill and the Sarno Road Transfer Station as shown in Figure 1, Overall Area Plan, and Figure 2, Site Plan. The site is permitted by the Florida Department of Environmental Protection (FDEP) as a Construction & Demolition (C&D) debris recycling and disposal and yard trash processing facility.

Considering its proximity to the Sarno Road Class III Landfill and Transfer Station, SWMD is performing due diligence with this preliminary evaluation of the facility to determine the risks and benefits related to operating the facility and any future expansions.

The goals of the evaluation were to review the existing design and regulatory conditions of the Florida Recyclers facility and to identify potential benefits and items of concern or risks to the County related to its continued operation and potential expansion and incorporation into the Sarno Road Class III Landfill. Jones Edmunds reviewed and evaluated the following:

- The permitting history and general operations data.
- The financial assurance documentation.
- The last 5 years of groundwater and landfill gas monitoring data.
- The stormwater management system and permit history.
- The volume and lifespan analyses for the existing site and for possible expansion/merger with the Sarno Road Class III Landfill.

This evaluation did not include a site visit, field investigations, or an evaluation of costs to operate the facility. This evaluation is not intended to provide a real estate value of the property. Jones Edmunds' evaluation was based on publicly available data and information. The information in this report presents our general findings and recommendations.

2 BACKGROUND

Florida Recyclers of Brevard, LLC is recorded as the owner of two parcels of property[2] that make up the facility for a total area of approximately 45 acres, with about 36 acres permitted as disposal area. The facility started operations in 1998.

Jones Edmunds reviewed publicly available information from FDEP's Oculus (Electronic Document Management System) database. In accordance with our review of these documents, the permitting and regulatory history of the site is as follows:

- **1998**: 20-acre unlined C&D debris disposal facility permitted.
- **1999**: Landfill expansion to 36 acres (unlined) and site converted to Class III Landfill.

[2] Parcel Nos. 27-36-24-00-507 (25.05 acres) and 27-36-24-00-508 (19.7 acres).

- **1999**: Site applied for a Materials Recovery Facility permit (FDEP Permit No. SO 05-0133456-005 MRF).
- **2005**: Permit renewed (FDEP Permit No. SO 05-0133456-006 Class III and -007 MRF).
- **2010**: Permit renewed (FDEP Permit No. SO 05-0133456-008 Class III and -009 MRF).
- **2014**: Intermediate permit modification and renewal application (FDEP Permit No. SO 05-0133456-010); permit modification requested to go back to a C&D debris and recycling facility; 10-year permit issued (expires June 1, 2024).
- **May 2015**: Order granting Variance issued by FDEP to allow for continued use of escrow account while seeking an alternative financial assurance mechanism for closure. Variance allowed for 12 months to secure an alternative financial mechanism.
- **August 2015**: Gas monitoring and reporting requirements were revised by FDEP to meet rule requirements.
- **June 2016**: Request by Owner to extend the Order granting Variance denied.
- **March 2017**: Consent Order OGC File No.: 16-1272 issued.
- **April 2017**: Permit modified to incorporate relevant actions from the Consent Order.

Florida Recyclers currently operates the facility under a 10-year operation permit for a C&D debris disposal landfill and recycling facility. At the time of application, Florida Recyclers paid one installment of the permit renewal fee; the 2nd installment payment of $2,500 is due by May 31, 2019.

The site's stormwater is managed is accordance with FDEP ERP No. 05-10333455-002-EI.

In addition to its permitted disposal/recycling/yard processing operations, the facility also operates the Simply Organic Lawn and Garden Center at the site. According to their website[3] they are a full-service lawn and garden center that provides organic mulches, soils, and fertilizers that are processed and sold on site.

3 SOLID WASTE OPERATIONS

The Florida Recyclers of Brevard, LLC disposal facility was initially designed and permitted as an unlined C&D debris disposal facility in 1998. Upon conversion to a Class III landfill in 1999, FDEP required that the facility perform water quality and landfill gas monitoring in accordance with Class III landfill requirements in effect at that time. In 1999, bottom liners and leachate collection systems were not required for Class III landfills. The requirements have since changed and these are now required for new or expanded Class III landfills.

In accordance with Rule 62-701, FAC, Class III and C&D debris is defined as follows:

> *62-701.200(14) "Class III waste" means yard trash, construction and demolition debris, processed tires, asbestos, carpet, cardboard, paper, glass, plastic, furniture other than appliances, or other materials approved by the Department, that are not expected to produce leachate that poses a threat to public health or the environment.*

[3] www.simplyorganiclawnandgardencenter.com

> *62-701.200(24) "Construction and demolition debris" means discarded materials generally considered to be not water soluble and non-hazardous in nature, including but not limited to steel, glass, brick, concrete, asphalt material, pipe, gypsum wallboard, and lumber, from the construction or destruction of a structure as part of a construction or demolition project or from the renovation of a structure, including such debris from construction of structures at a site remote from the construction or demolition project site.*

In 2014, the permittee requested to convert back to a C&D debris disposal facility because the site did not receive Class III waste and the incoming waste stream was primarily from new construction sites and vegetative waste. The solid waste operation permit was modified, but FDEP continued to require the permittee to monitor groundwater, surface water, and landfill gas per Class III landfill guidelines (as described in Section 6.0). FDEP also required that the facility's closure design be in accordance with Class III closure requirements (closure with a barrier layer, 24-inches of protective cover soil, and vegetation). The Operating Permit expires on June 1, 2024.

According to the permit drawings, the approximate natural grade on the site is at elevation 25 feet NGVD 29. The bottom of waste is at approximately elevation 24.4 feet. The setback requirements of 100 feet from the property boundary for Class III landfills was reduced to 50 feet because of the adjacent Sarno Road Class III Landfill and Sarno Road Transfer Station. The majority of the waste appears to be landfilled on the south portion of the site, and there are piles of mulched material placed on the north half of the site. Based on the current recycling and processing operations at the site, it is unclear if the entire permitted footprint area has landfilled waste.

Waste is monitored and recorded at the facility scale house. The site's 2014 Operation Plan states that recyclable materials from construction waste and vegetative waste are recycled and that non-recyclable construction debris is landfilled. The site does not currently accept CCA pressure-treated wood for disposal. However, CCA-treated wood was likely accepted for disposal in the past before FDEP's prohibition regarding disposal of this waste in unlined landfills. The 2014 Operation Plan noted that "any CCA pressure-treated wood (telephone poles) currently stored on site will be removed within 6 months from permit issuance." The facility is also authorized to process yard trash. Residential yard waste is processed into landscaping mulch and topsoil.

The facility has 10 groundwater monitoring wells and one surface water sampling point; monitoring and sampling are performed semi-annually. The facility also monitors landfill gas migration quarterly at the perimeter landfill gas probes and within structures on the property.

The Operating Permit states the facility accepts on average 200 tons per day. Based on our review of tonnage data over the last 4 years, the site has accepted on average of about 105 tons per day.

4 FINANCIAL ASSURANCE AND CONSENT ORDER REVIEW

The permittee previously maintained an escrow account for the closure financial assurance of the site. FDEP rules originally allowed this for private- and government-owned facilities. However, due to rule changes and changes in the facility's designation from a C&D facility to Class III to C&D, an escrow account is no longer a viable option for privately owned C&D facilities.

In 2014, FDEP approved the Florida Recyclers of Brevard's intermediate permit modification and renewal application that requested the designation of the facility be changed from a Class III landfill to a C&D debris disposal facility. This change meant that their escrow account no longer met the requirements of Chapter 403.707(9)(c), FAC, which states that escrow accounts may not be used as a mechanism to provide financial assurance for closure of a C&D facility. The facility Operating Permit (issued July 28, 2014) required that Florida Recyclers replace the escrow account with an alternative, acceptable financial assurance mechanism. In accordance with our review, the following legal actions were initiated between Florida Recyclers and FDEP:

- **Application for Variance, October 20, 2014**: Florida Recyclers requested a 2-year variance for continued use of the funded escrow account to prevent economic hardship while searching for an alternate mechanism.
- **Variance Request Granted, May 22, 2015:** FDEP approved Florida Recyclers application for variance (OGC File No. 14-0657) for a period of 12 months (expiration date – May 22, 2016).
- **FDEP Notice Letter, September 16, 2015**: FDEP determined that the 2014 escrow account balance was underfunded by approximately $5,000 and requested that a deposit be made to adequately fund the closure account within 30 days.
- **FDEP Warning Letter, June 10, 2016**: FDEP issued a letter stating that Florida Recyclers failed to meet the May 22, 2016 deadline for providing an alternate financial mechanism and was in violation of Rules 62-701.730 and 62-701.630, FAC.
- **Variance Extension Request Denied, June 17, 2016**: FDEP denied Florida Recyclers' request to extend the time allotment granted by the 2015 variance up to 24 months. FDEP deemed a new application for variance would be required to request additional time.
- **Consent Order Issued, March 29, 2017**: FDEP issued Consent Order (OGC No. 16-1272) against Florida Recyclers for failing to provide an alternate financial assurance mechanism. The solid waste permit was then modified to include relevant actions of the Consent Order into the permit.

The issued Consent Order required the facility to initiate a Trust Fund as proof of financial assurance and to make annual payments of $100,000 (plus any and all applicable trustee fees and expenses) to the Fund by January 5 beginning in 2018. Among other conditions, the facility is required to submit an updated Closure and Long-Term-Care Cost Estimate every 5 years in accordance with the applicable conditions of Rule 62-701.630, FAC. The cost estimate is due in 2019. Based on a verbal conversation with FDEP a Trust Fund has been established as an alternate funding mechanism.

The most recently submitted closure cost estimate from Florida Recyclers was approved by FDEP in April 2017 – estimated $2.62 million for closure of 35.31 acres, and estimated

$382,000 over 5 years for long-term care of 44.72 acres. Jones Edmunds compared the facility's 2017 inflated costs against the closure and long-term-care cost estimates for the Sarno Road Landfill most recently submitted in 2017, on a cost-per-acre basis. Table 1 provides the comparison figures.

Table 1 Closure and Long-Term Care Cost Estimate Comparison

	Closure Cost Estimate ($/acre)	Annual Long-Term-Care Cost ($/acre)
Florida Recyclers Facility (2017)	$74,100	$1,700
Sarno Road Class III Landfill (2017)	$188,000	$2,000

The permitted closure design plan for the facility provides two final cover system options, which are the installation of a geosynthetic clay liner cap or a 36-inch soil closure (18 inches of clay and 18 inches of soil). The closure cost estimate accounts for a clay-soil cover but not a geosynthetic clay liner closure cap. **Based on our experience and with recent significant increases in construction costs, it is our opinion that the cost per acre for closure is insufficient. Therefore, it is probable that the Trust Fund is underfunded.**

5 STORMWATER PERMITTING REVIEW

Jones Edmunds reviewed the facility's stormwater management system and permits, as found on the Florida Water Permitting Portal (http://flwaterpermits.com/). In general, the information provided on the website appears incomplete, particularly with regard to property ownership and easements. Jones Edmunds did not contact FDEP to clarify the questions that arose during our review. The focus of our review was on the stormwater system; the stormwater system design appears adequate for the final landfill design.

5.1 STORMWATER PERMIT DOCUMENT REVIEW

The facility site name is the "Florida Recyclers of Brevard." However, the Florida Water Permitting Portal shows it as the "Sarno Road Industrial Complex" and that website links to the FDEP Nexus portal, which lists the Environmental Resource Permit (ERP) documents related to the expansion and modification of the landfill as listed in Table 2.

Table 2 ERP History for the Sarno Road Industrial Complex

Permit Number	Facility Name	Date	Expiration Date	Description
0133455-001SI	Florida Recyclers of Brevard, Inc.	12/11/1997		Permit for Cell 1.
0133455-002EI	Florida Recyclers of Brevard, Inc.	02/08/2000	01/07/2005	Permit for Cell 1 expansion and a wet detention pond.
0133455-004EI	Florida Recyclers of Brevard/Sarno Road Industrial Complex	08/21/2007	08/20/2012	Permit Application for Sarno Industrial Subdivision on parcel north of the landfill.

The 0133455-001SI permit was for the original site and stormwater system, as shown in Figure 3 (Parcel 27-36-24-00-507). Jones Edmunds reviewed the design drawings and calculations submitted in the application package. The original design for the 25.05-acre parcel was for the front entrance and a 20-acre landfill (Cell 1) as shown in Figure 3. Stormwater treatment was provided by a "retention" area on the west, south, and east sides of the cell. The drawings refer to a retention pond, but the calculations refer to a wet detention pond. Typically, retention ponds are dry and rely on percolation to recover the treatment volume. Wet detention ponds are typically excavated 8 to 12 feet into the groundwater table to create a permanent pool of water. The wet detention pond at this facility has a mean depth of 2.82 feet; significantly less than the typical depth. Wet detention ponds have an engineered control structure to "detain" the treatment volume and slowly release it over time.

The 0133455-002EI permit allowed the landfill to expand to the current footprint and included the construction of a perimeter wet detention pond (labeled as a "retention" pond on the design drawings). The plans provided with the ERP application show new wet detention ponds on the north, northwest, east, and south sides of the landfill, and the grading indicates the "retention" pond on the southwest side remained unchanged. Figure 4 shows the ERP application design drawing for the full buildout georeferenced to an aerial.

Jones Edmunds evaluated the stormwater system described in the 0133455-002EI permit as the current condition for the landfill. We reviewed and compared the following:

- The design drawings and calculations submitted in the application package for 0133455-002EI.
- The wetland delineation and mitigation described in the application package for 0133455-002EI.
- The current aerial and the current digital elevation model (DEM) from LIDAR for Brevard County.
- The FEMA special flood hazard areas as provided online through the FEMA Map Service Center.

The design was for a 36-acre landfill cell (44.46-acre site), surrounded by interconnected wet detention ponds, with a direct discharge to the L-16 Canal. The curve number for the landfill cell is 80, which is equivalent to a grass field in good condition. This curve number is within the typical range for a landfill that will be closed with a soil and grass cover. The wet detention pond was designed to provide:

- 3.54 acre-feet (ac-ft) of water quality treatment volume.
- 4.08 ac-ft or permanent pool volume.
- A control structure with a 5-inch circular bleed-down orifice at elevation 22.50 feet National Geodetic Vertical Datum (ft NGVD) (the seasonal high water table [SHWT]), and a 4.5-foot rectangular weir with an invert of 23.26 ft NGVD.
- A pond bottom elevation at 17.0 ft NGVD.
- A mean pond depth of 2.82 feet.

Based on our review of the aerial, the stormwater system appears roughly the same size as designed. The design is adequate for a final cover of grass in good condition, with 8 to 12 inches of permeable soil. The as-built documentation was completed by Timothy C. Jelus, PE, of Jelus Engineering, Inc., and was submitted to FDEP on August 24, 2001.

The permit application for ERP 0133455-002EI also included a discussion of wetland mitigation. Figures 3 and 4 show the Cell 1 expansion with the wetland that was impacted by the construction of the Cell. FDEP issued a letter to William Kerr, of BKI, Inc., dated June 25, 2001, which stated that the preservation acquisition mitigation requirements for permit 133455-002 had been satisfied; and that the conditions of the permit modification 133455-003 had been fulfilled. The letter goes on to provide authorization for the escrow agent to release the security funds. Jones Emdunds was able to locate the permit modification conditions file 133455-003. **This documentation confirms satisfactory completion of the mitigation requirement for the facility.**

Jones Edmunds also compared the current aerial and Brevard County light detection and ranging (LiDAR) data to the permitted design drawings, see Figure 5. The LiDAR data is displayed as a range of colors with each color corresponding to a specific elevation. If the landfill was constructed according to the plans, the colors would align with the contours. The facility's current operation is primarily recycling and yard waste processing. The side slopes are not uniform or at the design elevation. It is very important to note that an ERP is based on the design of the final grades of the closed landfill. Therefore, noting that the current landfill grades are not the same as the ERP does not indicate that the landfill operation is violating their permit. Rather, it indicates that work needs to be done to achieve the final grade that was permitted in the ERP. **In general, the stormwater system has the same top-of-bank footprint as depicted in the permitted design drawing. The actual depth of the system compared to the permitted design cannot be determined without survey.**

The landfill site is not within a flood hazard area. Figure 6 shows the Federal Emergency Management Agency (FEMA)-approved Flood Insurance Rate Map for the area. The area shaded in brown indicates the special flood hazard area. The landfill is outside of the designated flood hazard area.

In 2007, Florida Recyclers applied to FDEP to modify their permit, 0133455-004EI, to construct the "Sarno Road Industrial Complex" on the parcel to the north of the landfill (see Figure 7). The permit application discussed expanding the landfill's stormwater treatment ponds to provide treatment for the proposed development and mitigating the impact to a wetland on the parcel. FDEP did not issue the permit. In 2010, the west side of the parcel to the north of the facility, which includes wetlands, was deeded to the City of Melbourne; and in 2012, the east side of the parcel to the north of the facility was sold to Liberty Investments of Brevard, LLC.

5.2 ERP General Observations

In general, the stormwater system appears adequate for the design. If the permitted design conditions were to change (such as using steeper slopes or a more impervious cover such as a geomembrane), the stormwater management system would need to be modified and re-permitted.

The ERP application and drawings did not include a detailed sediment and erosion control plan. Although the site is primarily operating as a recycling and yard waste processing facility, sediment control is generally recommended. Jones Edmunds expects that the stormwater system will have accumulated sediment from the landfill operations and will need some excavation to restore the design elevations.

6 WATER QUALITY AND LANDFILL GAS MONITORING DATA REVIEW

6.1 BACKGROUND

The groundwater monitoring network at the Florida Recyclers facility consists of 10 groundwater compliance wells installed in the surficial aquifer, one surface water monitoring point, and 10 landfill gas monitoring probes. The water quality monitoring and reporting are subject to the Class III landfill requirements, Rule 62-701.510, FAC. Groundwater and surface water quality monitoring is conducted semi-annually; samples are analyzed for field and laboratory parameters as defined in Appendix 3 of the current solid waste operations permit.

Based on a technical report dated May 2015, prepared by Universal Engineering Sciences for Florida Recyclers, there is a containment wall (running north south) adjacent to the drainage canal between the facility access road and the scale house as a means of keeping potential contaminates within the landfill. The report states that the wall is constructed of relatively impermeable clay and approximately 2 feet wide by 4 feet deep. The report did not provide the length of the wall. However, in 2010 FDEP questioned the existence of the wall since no as-builts or evidence of a sealed slurry wall/confining layer was provided. FDEP stated even if the purported “clay layer” were a “confining clay” it would not be much good as the well screenings crossed it; therefore, whatever is in their ground water or surface water pond could seep into the L-16 canal.

A technical report was due in August 2017. We are unable to locate that report on the FDEP Oculus site.

6.2 GROUNDWATER MONITORING NETWORK

The compliance groundwater monitoring wells are along the perimeter of the landfill and are identified as MW-2, MW-4R, MW-5R, MW-6R, MW-7, MW-8, MW-9R, MW-10, MW-11, and MW-12. The total well depths range from 14.8 to 16.6 feet below land surface with 10-foot screen intervals. Wells MW-9R, MW-10, and MW-11 are up-gradient. Groundwater flow at the site is generally south to southeast although flow appears to vary over time.

6.2.1 GROUNDWATER MONITORING WELLS

Jones Edmunds reviewed the last 5-years’ groundwater monitoring data for the facility. We also reviewed the background groundwater monitoring well MW-16S at the adjacent Sarno Road Class III Landfill (WACS ID 16255), and used that data as the control for comparison. The Sarno Class III Landfill well MW-16 is also installed in the shallow surficial aquifer with a total well depth of 15.5 feet below land surface with a 10-foot screen interval.

The groundwater monitoring results for the past 5 years for all wells at the facility were statistically compared to the past 5 years of data for the Sarno Class III Landfill background well MW-16S using calculated control ranges. Any parameters with a result reported above the laboratory detection limit at the facility were included in the comparison. For the parameters included, any result reported as below the laboratory detection limit was replaced with half the detection limit for statistical calculation purposes. An average 5-year concentration for each selected parameter was calculated for MW-16S along with an outer control limit (the average plus three times the standard deviation). The 5-year average result for each well and selected parameters at the facility were compared to the associated outer control limit for MW-16S. Summary tables are included in Attachment A. The tables summarize results reported above groundwater protection standards for the past 5 years at the Florida Recyclers and Sarno Road Class III Landfill background well MW-16S. The following results were noted:

- Melbourne Landfill wells MW-2, MW-4R, MW-5R, and MW-6R have multiple indicator and metals parameters with results that are statistically different than those reported for background well MW-16S.
- Sodium in wells MW-7 through MW-12 is statistically higher than that reported in MW-16S; however, the concentrations are relatively low level (by a factor of 10) compared to MW-2, MW-4R, MW-5R, and MW-6R.
- Although Chromium results are for wells MW-2 and MW-7 through MW-12 appear to be outside the control range, this is an artifact of the calculation. Chromium was actually below the laboratory detection limit for the entire report period in these wells. However, the detection limit for the Melbourne wells was 4.5 micrograms per liter (µg/L) and the detection limit for MW-16S was 2.5 µg/L, resulting in a false positive bias for samples with a high number of non-detects. Results for Zinc have the same false positive bias.
- The only volatile organic carbons (VOCs) reported above detection limits for the facility during the past 5 years were a single report of low-level 1,2-Dibromo-3-Chloropropane in MW-10 plus random low-level Acetone and Chloromethane in multiple wells. Acetone and Chloromethane are common laboratory cross-contaminants.
- Sulfate and Aluminum are not sampled at the Sarno Class III landfill, and results for the facility wells are compared to groundwater standards only.

In addition to the control range comparison, historical linear-regression trend analysis graphs were also prepared. The following trends were noted:

- Increasing Conductivity, Total Dissolved Solids (TDS), Ammonia-Nitrogen, Chloride, and Sodium in MW-2, MW-4R, MW-5R, and MW-6R.
- Decreasing Chloride, Sulfate, and Sodium in MW-8, MW-10, and MW-11. Sulfate is also decreasing in MW-7 and MW-9. Decreasing Total Dissolved Solids in MW-8, MW-9, MW-10, and MW-11.
- Increasing Arsenic in MW-2, MW-4R, and MW-5R.
- Increasing Barium in MW-2, MW-4R, MW-5R, and MW-6R.
- Decreasing Iron in MW-2, MW-4R, MW-6R, MW-8, MW-11, and MW-12. Increasing Iron in MW-5R.
- Increasing Nickel in MW-5R.

- Increasing Vanadium in MW-2, MW-4R, and MW-5R. Decreasing Vanadium in MW-8, MW-9, MW-10MW-11, and MW-12.
- Decreasing Zinc in MW-10 and MW-11.

6.2.2 Surface Water Data Review

A review of surface water results at the Melbourne Landfill (sampling site SW-1) indicate elevated Conductivity, Ammonia, Chemical Oxygen Demand (COD), Total Phosphorus, Sulfate, Total Dissolved Solids, Total Hardness, Total Kjeldahl Nitrogen, Total Organic Carbon, Antimony, Arsenic, Chromium, Copper, and Iron. Sources for these parameters may be attributed to the type of materials being landfilled and/or processed at the facility such as:

- Drywall/Sheetrock: Calcium Sulfate (Gypsum) – Conductivity, Total Dissolved Solids, Total Hardness, Sulfate.
- CCA-Treated Lumber: Arsenic, Chromium, Copper.
- Yard Waste/Mulch: Ammonia, COD, Total Phosphorus, Total Kjeldahl Nitrogen, Total Organic Carbon.

6.2.3 Gas Monitoring Probes

Gas monitoring at the Florida Recyclers facility is conducted quarterly per the requirements of the July 28, 2014 site permit and the Monitoring Plan Implementation Schedule of Chapter 62-160, FAC. Eleven gas monitoring probes (GMPs) are installed along the perimeter of the landfill. The probes are sampled quarterly to determine if excessive methane gas concentrations exist within the soils outside of the landfill. In addition, ambient air is sampled within building structures adjacent to the landfill (i.e., scale house office, etc.) for the presence of methane.

The most recent gas sampling event was conducted in February 2018 by Universal Engineering Sciences, Inc. Based on the First Quarter 2018 Quarterly Gas Monitoring Event report, dated February 23, 2018, no methane gas was detected to have concentrations greater than the detection limit of the sampling instrument. The detection limit of the gas sampling instrument is 1 percent.

The lower explosive limit (LEL) for methane gas is 5 percent or 50,000 parts per million (ppm). The FDEP Solid Waste Department and Rule 62-701, FAC, guidelines for a combustible gas exceedance is 25 percent of the LEL, or 12,500 ppm. Since December 2015, all quarterly gas monitoring results are reported as % LEL methane, and no gas exceedances were measured.

From August 2004 to September 2015, the quarterly monitoring results were measured and reported as ppm methane units, and in all cases no monitoring point samples exceeded 12,500 ppm methane.

6.2.4 Monitoring Data General Observations

The facility's shallow surficial wells MW-2, MW-4R, MW-5R, and MW-6R have elevated levels of Conductivity, Chloride, Sodium, Sulfate, TDS, and Barium compared to background well MW-16S at the Sarno Landfill. TDS was consistently above the Safe Drinking Water Standard (SDWS) of 500 milligrams per liter (mg/L) in all four down-gradient Melbourne

wells, and Ammonia-Nitrogen, Chloride, and Sodium were repeatedly reported above their respective groundwater protection standards during the past 5 years. In addition, Conductivity, TDS, Ammonia-Nitrogen, Chloride, Sodium, and Barium are all increasing in wells MW-2, MW-4R, MW-5R, and MW-6R. Increasing Arsenic was also reported in MW-2, MW-4R, and MW-5R, and reported concentrations have repeatedly been greater than the Primary Drinking Water Standard (PDWS) of 10 µg/L.

Groundwater in the down-gradient wells appears to be impacted by the landfill. The source is likely the type of materials being landfilled and/or processed at the Melbourne facility including yard waste, mulch, compost materials, and construction debris such as drywall and CCA-treated lumber. A review of surface water results at the Melbourne Landfill indicate elevated levels of Conductivity, Ammonia-Nitrogen, COD, Total Phosphorus, Sulfate, TDS, Total Hardness, Total Kjeldahl Nitrogen, Total Organic Carbon, Antimony, Arsenic, Chromium, Copper, and Iron. These parameters are also consistent with erosional run-off from materials in the landfill.

Groundwater impacts, in a pattern similar to that noted for the Florida Recyclers' facility, were noted in the two Sarno Class III Landfill shallow-surficial wells, MW-24S and MW-25S, just down-gradient of the Florida Recyclers' property boundary.

7 VOLUME AND LIFESPAN ANALYSES

As part of this preliminary engineering evaluation, Jones Edmunds performed volume and lifespan analyses for the existing site and for the possible expansion/merger with the Sarno Road Class III Landfill. The following sections discuss the City of Melbourne buildout constraints, volume analyses, and a possible option of merging the two facilities and designing a valley fill.

7.1 BACKGROUND

On November 12, 2009, the City of Melbourne approved Brevard County's application for a CUP (CU-2009-06) and City Ordinance (Ordinance No. 2009-41) for a 9.5-acre expansion of the Sarno Road Class III Landfill up to a height of 40 feet above grade. The Florida Recyclers facility also has a similar CUP; however, Jones Edmunds was not able to obtain a copy of the document.

If the County were to acquire the Florida Recyclers facility and expand the Sarno Landfill footprint, the County would be required to submit a CUP application with a revised site plan to the City Engineering Department and Planning and Economic Development Department in accordance with City Ordinance No. 2009-41, Condition 2.a. Since City land development regulations limit the height of any structure or material or debris pile to less than 40 feet, the County will also have to make a request for a variance to exceed the height restriction.

According to the Ordinance, the County is expected to close the Sarno Road Class III Landfill by December 31, 2020, unless the County applies for and receives approval of a new proposed closure date by the City. The results of Sarno's 2017 capacity analysis submitted to FDEP indicates that landfill closure is expected by September 2024. This lifespan estimate included the approximately 9.5-acre footprint of the Pond A expansion area and a final landfill elevation of 104 ft NGVD.

7.2 VOLUME ANALYSIS

7.2.1 FLORIDA RECYCLERS MELBOURNE LANDFILL

The Florida Recyclers facility is permitted to a buildout elevation of 104 ft NGVD; however, the site's CUP from the City of Melbourne limits the full buildout to a maximum of 40 feet above grade or about an elevation 64 ft NGVD. Jones Edmunds performed two remaining volume analyses for the Florida Recyclers facility: one assuming full buildout to elevation 104 feet and one to elevation 64 feet based on the CUP. The volumes were calculated using AutoCAD Civil 3D 2016 software and based on the following:

- Topographic survey dated March 17, 2017, performed by Pickett & Associates Inc.
- Permitted Final Closure (up to 104 feet elevation), Melbourne Landfill and Recycling Center top-of-waste surface (final cover surface lowered 3 feet to account for final cover), dated March 2014.
- Conceptual Final Closure (up to 64 feet elevation), Melbourne Landfill and Recycling Center top-of waste surface (final cover surface lowered 3 feet to account for final cover).

Florida Recyclers performs recycling and yard waste processing operations within the footprint of the facility. Several areas identified as mulch or recycling material stockpiles are not representative of permanent waste disposal and were removed from the survey data. Currently, landfilling operations are isolated to the south edge of the facility; the current Operation Permit states that on average the facility accepts about 200 tons per day or 830 cubic yards per year (CY/yr) (assuming 500 pounds per cubic yard [lb/CY] waste density).

The estimate of the remaining life of the facility, summarized in Table 3. Given the information available, Jones Edmunds performed the lifespan calculation using an average of the annual volumetric disposal rate, in CY/yr, over the last 4 years.

As of March 17, 2017, Jones Edmunds estimates that approximately 970,000 cubic yards (CY) of waste is in-place at the facility. We assumed that this waste is primarily new construction debris or vegetative waste. In March 2013, a topographic survey report[4] determined that approximately 786,000 CY of waste was in-place. From 2013 to 2017, approximately 185,000 CY of design capacity was consumed, which equates to about 46,300 CY/yr over 4 years.

[4] Prepared by William Mott Land Surveying.

Table 3 Florida Recyclers Facility – Estimate of Remaining Life Based on Current Landfill Rates

Buildout Elevations	Total Design Capacity (CY)	Estimated Used Capacity (CY)	Estimated Remaining Capacity (CY)	Annual Waste Rate: (CY/yr)	Lifespan (yr)
Annual Waste Rate: FL Recyclers					
104 feet Permitted	2,600,000 (1)	970,000	1,618,000 (3)	46,300	35
64 feet CUP Restriction	1,620,000 (2)	970,000	650,000	46,300	14
Annual Waste Rate: Sarno Landfill					
104 feet Permitted	2,600,000 (1)	970,000	1,618,000 (3)	150,000	11
64 feet CUP Restriction	1,620,000 (2)	970,000	650,000	150,000	4.3

Notes:

1. Total design capacity to permitted buildout elevation of 104 feet NGVD from March 1999 FDEP Permit application.
2. Estimated remaining volume from CAD.
3. Estimate of remaining capacity as of March 2017.

7.2.2 Expansion Option

The Sarno Road Class III Landfill and the Florida Recyclers facility limits-of-waste boundaries are approximately 300 feet apart. If the County were to acquire the facility from Florida Recyclers of Brevard, Inc., there is a potential to merge the footprint of the two facilities by filling the airspace between the two disposal areas, i.e., valley fill. By pursuing the option of valley fill construction, an approximate 6.6 acres of additional disposal area footprint is gained or up to 1,330,000 CY of capacity (assuming 104-foot final buildout elevation).

Valley fill designs are not unusual, but they do present several challenges during the design and construction phases. Assuming the expanded area would be permitted as a Class III disposal facility, the following regulations would apply:

- Rules 62-701.400(3)(g) and 62-701.430(1)(c), FAC – a bottom liner system (60-mil minimum HDPE bottom liner and GCL) and a primary leachate collection and removal system would be required.
- Rule 62-701.340(3)(c), FAC – limits of waste shall be set back 100 feet from the property boundary, measured from the toe of the proposed final cover slope to the landfill property boundary.

Jones Edmunds performed a volume analysis of the conceptual valley fill design, using two conceptual closure surfaces with buildout elevations of 104 feet and 64 feet. These two surfaces were created to represent design closure grades required to blend the final closure surfaces listed below over the valley fill area:

1. Permitted Final Closure (up to elevation 104 feet) Florida Recyclers facility top-of-waste surface (final cover surface lowered 3 feet to account for final cover), dated March 2014.

2. Permitted Final Closure (up to elevation 104 feet) Sarno Road Class III Landfill top-of-waste surface (final cover surface lowered 3 feet to account for final cover), dated August 2016.

Table 4 shows the total conceptual design capacity and life span of the valley fill based on an airspace consumption rate matching the Sarno Road Class III Landfill (about 150,000 CY/yr). Table 4 also shows the total life span of the valley fill airspace plus the remaining capacity of the facility at the Sarno Road Class III Landfill consumption rate.

Table 4 Valley Fill Construction Option – Volume and Lifespan Analysis

Buildout Elevations	Conceptual Design Capacity (CY)	Annual Waste Rate (CY/yr)	Lifespan (yr)
Valley Fill Lifespan			
104 feet Permitted	1,330,000	150,000	9
64 feet CUP Restriction	537,000	150,000	4
Valley Fill plus Florida Recyclers Facility			
104 feet Permitted	2,950,000	150,000	20
64 feet CUP Restriction	1,200,000	150,000	8

If the County were to pursue this expansion option, the regulatory and design requirements need to be further evaluated to determine the feasibility and cost benefit of a valley fill expansion. The estimated construction cost of this additional capacity is approximately $300,000 per acre – refer to Section 9, Supplemental Information, for cost estimates.

8 GENERAL OBSERVATIONS AND RECOMMENDATIONS

8.1 SUMMARY

Based on our review and evaluation of publicly available information, it appears that this facility is operating in a manner consistent with their permit and following regulatory guidelines. General findings related to the data review are as follows:

- Facility Operation:
  - The site operates primarily as a C&D recycling and yard waste processing facility. Disposed waste is primarily recycling residual from these operations (i.e., new construction material, vegetative waste).
  - Approximately 40 percent of the permitted volume has been consumed since 1999. The in-place waste density is unknown.
- Financial Assurance Review:
  - The site was issued a Consent Order (OGC File No. 16-1272) requiring the permittee to establish a Trust Fund as an alternative mechanism for financial assurance. It appears this was completed by the Owner.
  - Based on the approved closure cost estimate submitted to FDEP in 2017, the Trust Fund is likely underfunded when compared to recent higher closure costs at similar facilities.

- Stormwater System Evaluation:
  - In general, the stormwater system appears to be adequately designed for the permitted design of the existing facility.
  - If permitted design conditions change, such as steeper slopes or a more impervious cover (i.e., geomembrane) is permitted, the stormwater system will need to be modified.
  - The ERP application and drawings did not include a detailed sediment and erosion control plan. Jones Edmunds expects that the stormwater system will have accumulated sediment result from landfilling operations and will require excavation to restore design elevations.
- Stormwater Permitting Review:
  - The sequence of ERPs publicly available on FDEP databases for this facility is incomplete.
  - A complete timeline of the site's stormwater permitting history could not be developed based on the documents available on FDEP's Oculus website.
  - Wetland Mitigation:
    - The February 2000 ERP application discussed wetland mitigation and included a proposed mitigation plan for the expansion area. Jones Edmunds found documentation of acceptance of a final mitigation plan and documentation of satisfactory completion of the mitigation requirement.
- Groundwater and Gas Monitoring Network Evaluation:
  - The existing groundwater monitoring and landfill gas monitoring system at the facility meets regualtions and is monitored semi-annually following Class III landfill monitoring regulations.
- Environmental Monitoring Data Review:
  - Several down-gradient groundwater monitoring wells and shallow surficial wells appear to be impacted by the facility. The sources of the elevated groundwater monitoring parameters may be attributed to the type of materials processed at the facility and poor management of active face areas.
  - The facility has no evidence of groundwater assessment plans in effect.
  - Gas migration is not evident at the facility. No combustible gas exceedances have been measured outside of the limits of waste on the property boundary since August 2004. Data before August 2004 was not reviewed.
- Volume Analysis and Lifespan Evaluation:
  - Florida Recyclers facility:
  - The remaining lifespan of the 34-acre landfill for the volume of waste currently landfilled at the Florida Recyclers facility ranges from 14 years at a buildout to elevation 64 feet to 35 years at the permitted buildout elevation of 104 feet.

- The remaining lifespan of the 34-acre landfill based on the volume of waste currently landfilled at the Sarno Road Landfill ranges from 4 years at a buildout elevation of 64 feet to 11 years at the permitted buildout elevation of 104 feet.

- Valley Fill Option:

  - The estimated lifespan of the conceptual 6.6-acre valley fill option based on the volume of waste currently landfilled at the Sarno Road Landfill ranges from 4 years at a buildout elevation of 64 feet to 9 years at a buildout to the permitted elevation of 104 feet.
  - The estimated lifespan of the valley fill option plus the remaining capacity of the Florida Recyclers facility based on the volume of waste currently landfilled at the Sarno Road Landfill ranges from 8 years at a buildout to elevation 64 feet to 20 years at a buildout to the permitted elevation of 104 feet

- Landfill Expansion Construction Requirements:

  - Assuming the expansion area would be a permitted Class III disposal facility in accordance with Chapter 62-701.400(3)(g), FAC, a bottom liner system (60-mil minimum HDPE bottom liner and GCL) and a primary leachate collection and removal system are required.

- Major Construction Permit Modification:

  - The expansion project would require a major redesign and permit modification. The expansion challenges will be the design and construction of the liner and leachate collection system over the existing unlined landfills and likely significant stormwater modifications.
  - If a height variance is not granted by the City, the new expansion area would be limited to an approximately 64-foot buildout elevation and limited lifespan.

Major concerns related to the data review are as follows:

- In Jones Edmunds' experience, unlined disposal facilities exhibit higher environmental risk. The environmental liability of this facility is unclear.
- There is evidence of groundwater contamination at this facility. The source and long-term risk posed by this evidence of contamination may require further evaluation.
- It is unclear what obstacles the County may face in obtaining a height variance as described in the City of Melbourne CUP for the Sarno Road Landfill. The City's 40-foot height limitation could reduce the permitted landfill capacity by approximately 40 percent.
- If the County were to pursue the valley fill expansion option, the cost benefit results of constructing the expansion area compared to the additional capacity obtained for Class III waste disposal may be unfavorable.

8.2 RECOMMENDATIONS

- Since we could not locate final as-built drawings of the stormwater system in the FDEP files, Jones Edmunds recommends that the as-built certification be requested or a detailed survey be performed to determine adequacy of system.

- Jones Edmunds recommends that Brevard County request documentation of adequacy of the Trust Fund for closure costs.
- Jones Edmunds recommends that Brevard County obtain the City Ordinance granted for the Florida Recyclers facility and confirm with the City of Melbourne the current procedures in place for obtaining a height variance.

9 SUPPLEMENTAL INFORMATION

The following supplemental information provides additional cost information to supplement Section 7.2.2 regarding liner development costs associated with the capacities presented in Table 4. Table 5 presents approximate development costs based on an estimated $300,000 per acre for lining the valley and unfilled portions of the Florida Recyclers landfill. This table also provides the relative development cost for the additional capacity in terms of cost per cubic yard of disposal capacity.

The Valley Fill Lifespan calculations assume that both the Sarno Class III and Florida Recyclers cells have been filled to capacity, and the area to be lined, associated cost, and cost per disposal capacity are presented for build-out elevations of 64 feet NGVD and 104 feet NGVD. The 64-foot option requires 13 acres to be lined at an estimated cost of $3.9 million with relatively high development cost of $7.30 per cubic yard; whereas, the 104-foot option more than doubles capacity and requires 20 acres to be lined at an estimated cost of $6.0 million and development cost of $4.51 per cubic yard.

Alternatively, Class III waste may be placed over the entire Florida Recyclers landfill if a liner is first placed over the existing waste. The existing 34-acre landfill has about 970,000 cubic yards of solid waste in place and a remaining 650,000 cubic yards up to a height of 64 feet NGVD and 1.6 million cubic yards up to 104 feet NGVD. We estimated the construction cost to be $300,000 per acre. Lining the Valley Fill and over the entire Florida Recyclers facility requires 44 acres and a cost of $13.2 million for build-out to 64 feet NGVD and a cost of $11.00 per cubic yard. The 104-foot build-out requires 48 acres of liner at a cost of $14.4 million and a development cost of $4.88 per cubic yard.

Table 5 Estimated Construction Costs

Buildout Elevations	Conceptual Design Capacity (CY)	Liner acreage (AC)	Development Cost ($)	Cost per CY ($/CY)
Valley Fill Lifespan				
64 feet CUP Restriction	537,000	13	$3.9M	$7.30
104 feet Permitted	1,330,000	20	$6.0M	$4.51
Valley Fill plus Florida Recyclers Facility				
64 feet CUP Restriction	1,200,000	44	$13.2M	$11.00
104 feet Permitted	2,950,000	48	$14.4M	$4.88

Figures

FIGURE 1
OVERALL AREA PLAN
BREVARD COUNTY, FLORIDA

JonesEdmunds

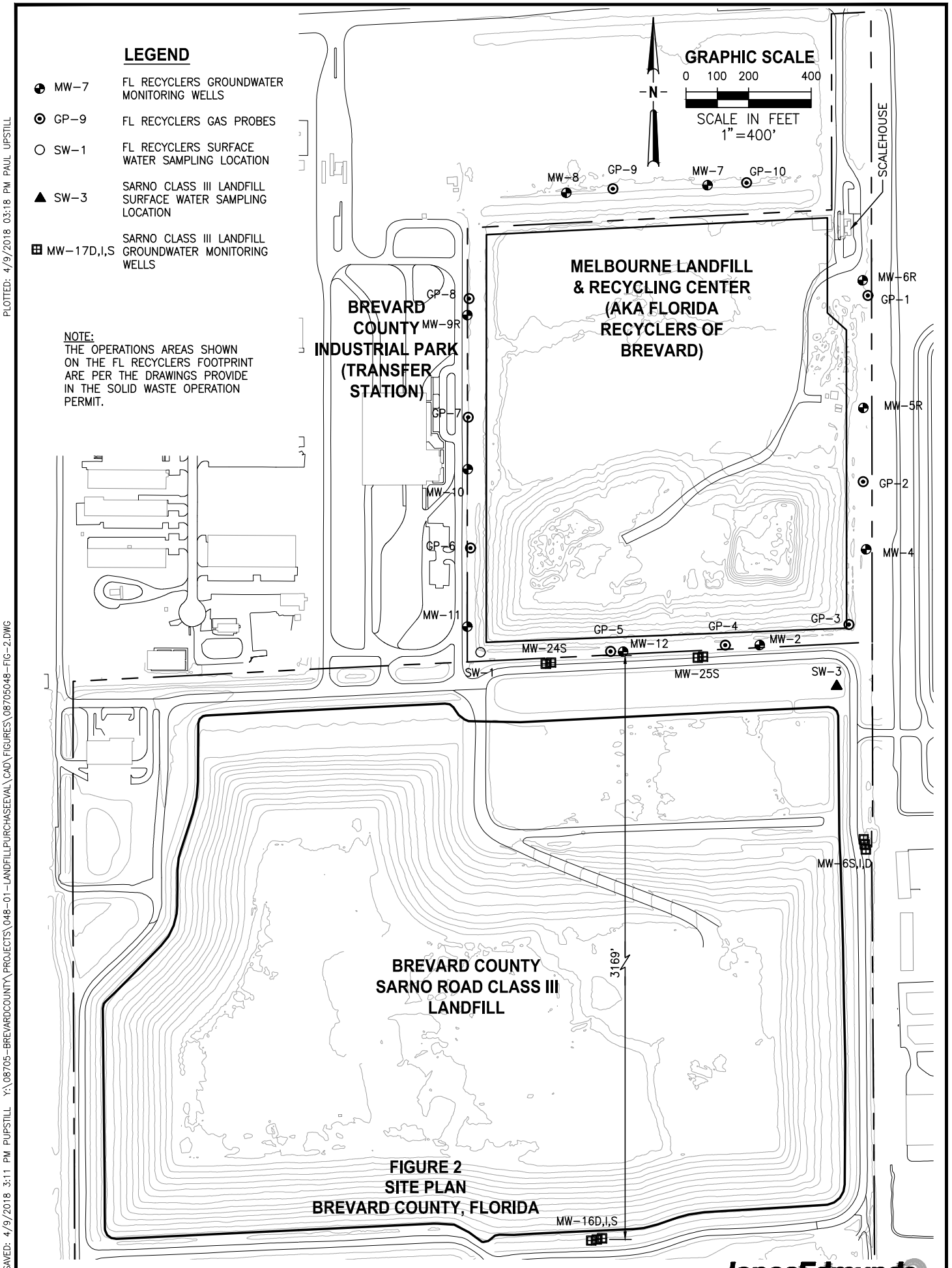

FIGURE 2
SITE PLAN
BREVARD COUNTY, FLORIDA

JonesEdmunds

PLOTTED: 4/9/2018 03:18 PM PAUL UPSTILL

SAVED: 4/9/2018 3:11 PM PUPSTILL Y:\08705-BREVARDCOUNTY\PROJECTS\048-01-LANDFILLPURCHASEEVAL\CAD\FIGURES\08705048-FIG-2.DWG

Figure 3

ERP 133455-001 Project Plan

Florida Recylers of Brevard

JonesEdmunds

For Informational Purposes Only Q:\08705_Brevard\048-01_Landfill_Purchase_Evaluation\mxd\Final\Fig3_133455-001_ProjectPlan.mxd SNyquist 4/9/2018

Figure 4

ERP 133455-002 Project Plan

Florida Recylers of Brevard

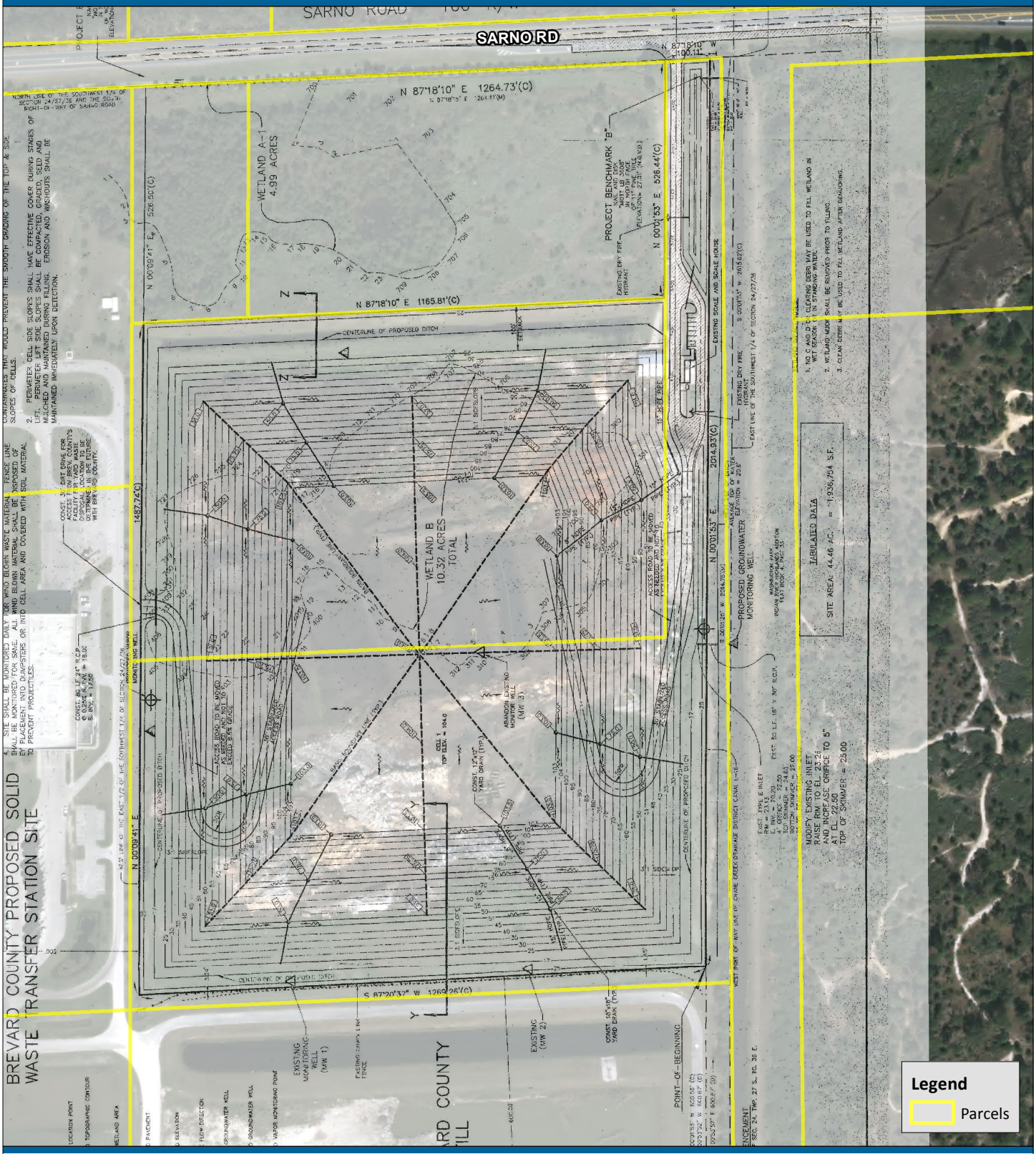

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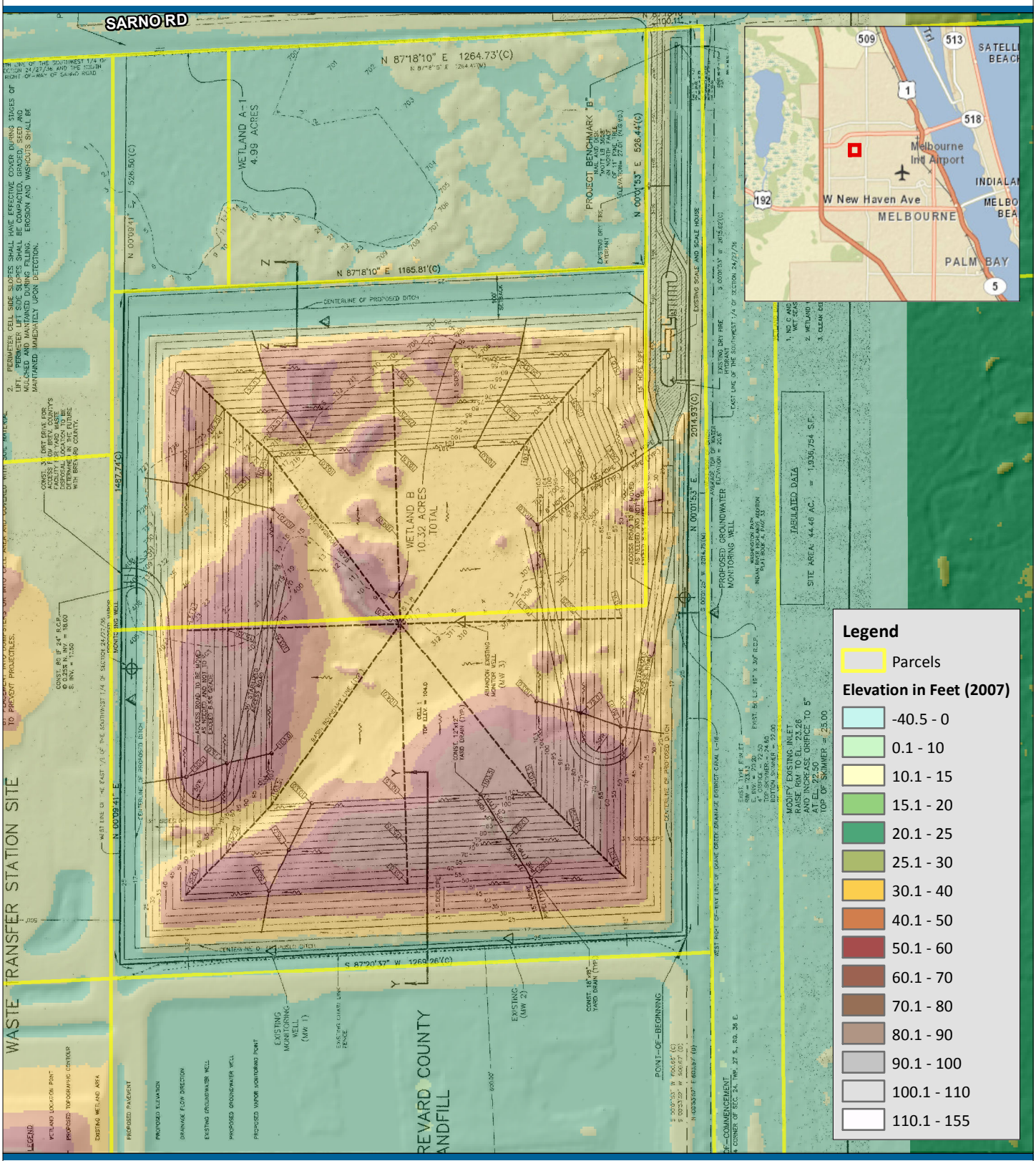
Figure 5

ERP Design Contours Compared to LIDAR Elevation

Florida Recylers of Brevard



0 150 300

Feet
1:3,600

N

JonesEdmunds

For Informational Purposes Only Q:\08705_Brevard\048-01_Landfill_Purchase_Evaluation\mxd\Final\Fig5_Elevation_DesignContours.mxd SNyquist 4/9/2018

Figure 6

Flood Hazard Map

Florida Recylers of Brevard

0 150 300

Feet
1:3,600

N

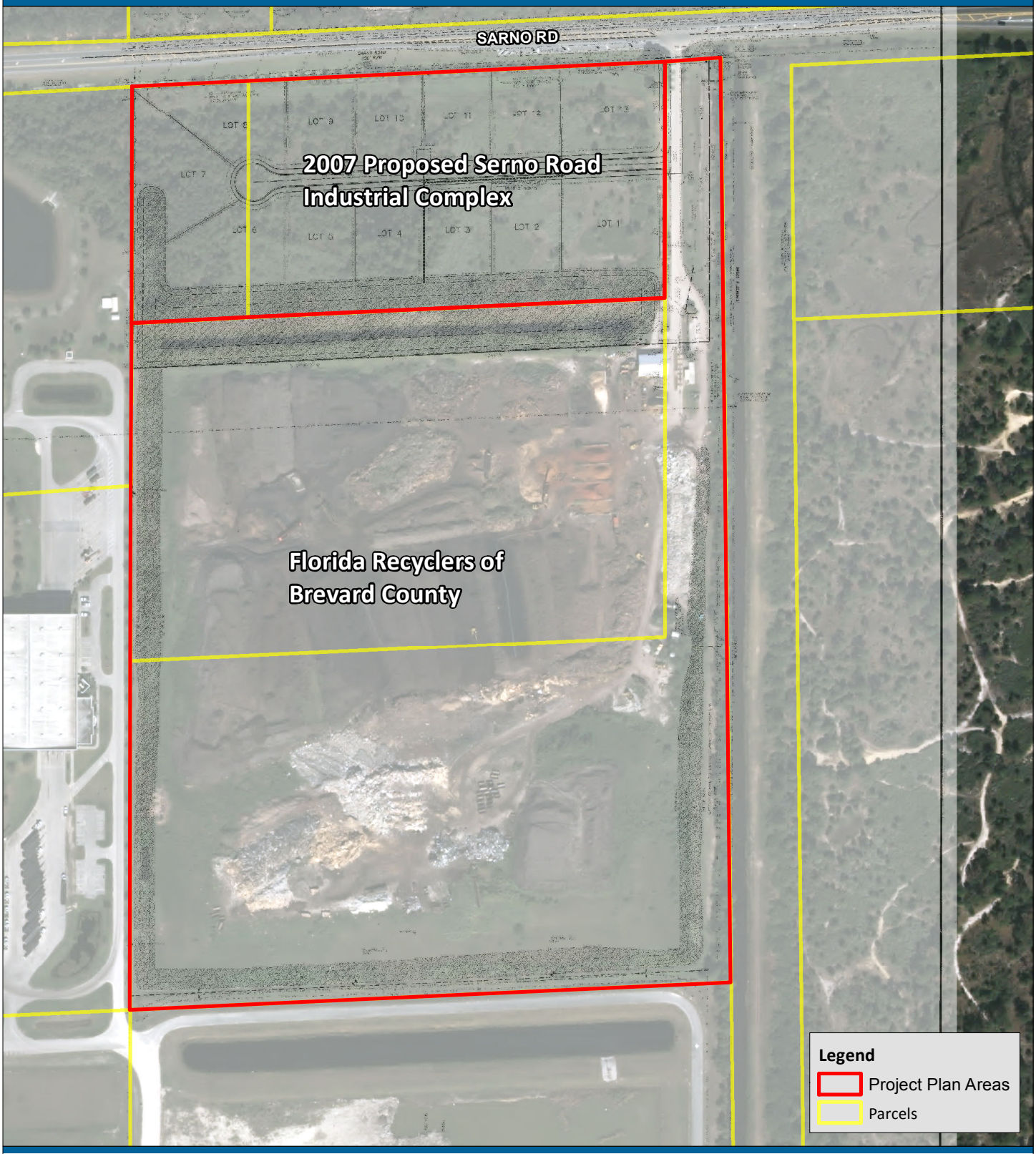
JonesEdmunds

For Informational Purposes Only Q:\08705_Brevard\048-01_Landfill_Purchase_Evaluation\mxd\Final\Fig6_FloodHazard.mxd SNyquist 4/9/2018

Figure 7

ERP 133455-004 Project Plan - Not Permitted

Florida Recylers of Brevard



JonesEdmunds

For Informational Purposes Only Q:\08705_Brevard\048-01_Landfill_Purchase_Evaluation\mxd\Final\Fig7_133455-004_ProjectPlan_NotPermitted.mxd SNyquist 4/9/2018

Attachment A

Groundwater Tables

Summary Table
of Groundwater Data
5-Year Average

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
MELBOURNE LANDFILL AND RECYCLING CENTER COMPARED TO SHALLOW SURFICIAL BACKGROUND AT SARNO LANDFILL
MAY 2013 THROUGH OCTOBER 2017

PARAMETER	SAMPLING DATE	CONDUCTIVITY (FIELD)	pH (FIELD)	AMMONIA NITROGEN	CHLORIDE	NITRATE NITROGEN	SULFATE	TOTAL DISSOLVED SOLIDS	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CHROMIUM	COBALT	COPPER
STANDARD		(1)	6.5-8.5 S.U.**	2.8 mg/L***	250 mg/L**	10 mg/L*	250 mg/L**	500 mg/L**	200 µg/L**	6 µg/L*	10 µg/L*	2000 µg/L*	4 µg/L*	5 µg/L*	100 µg/L*	140µg/L***	1000 µg/L**
UNITS		uS/cm	S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sarno Shallow Surficial Background Well																	
MW-16S	**5 YR AVERAGE**	**675.3**	**6.49**	**0.30**	**7.0**	**2.3**	**34.6**	**431.2**	**Not Sampled**	**0.36**	**2.38**	**36.25**	**0.29**	**0.29**	**1.25**	**2.38**	**1.44**
	std dev	**87.7**	**0.19**	**0.25**	**2.0**	**2.62**	**9.5**	**39.3**		**0.19**	**0.40**	**6.55**	**0.11**	**0.11**	**0.00**	**0.40**	**0.59**
	3x std dev	**263**	**0.56**	**0.76**	**5.9**	**7.86**	**28.4**	**118**		**0.57**	**1.19**	**19.7**	**0.33**	**0.33**	**0.00**	**1.19**	**1.76**
	upper range	**938**	**7.05**	**1.06**	**12.9**	**10.17**	**63.0**	**549**		**0.93**	**3.56**	**55.9**	**0.62**	**0.62**	**1.25**	**3.56**	**3.19**
Melbourne Surficial Compliance Wells																	
MW-2	**5 YR AVERAGE**	**1370**	**7.03**	**2.29**	**150.0**	**0.089**	**62.1**	**865**	**42.2**	**0.76**	**6.55**	**71.94**	**0.53**	**0.51**	**2.25**	**1.05**	**1.10**
MW-4R	**5 YR AVERAGE**	**1780**	**6.97**	**5.77**	**198.9**	**0.041**	**129.5**	**1240**	**196.6**	**0.82**	**8.07**	**147.54**	**0.53**	**0.51**	**4.03**	**1.05**	**1.10**
MW-5R	**5 YR AVERAGE**	**2427**	**6.74**	**13.15**	**443.6**	**0.196**	**75.0**	**1830**	**37.8**	**0.76**	**6.39**	**130.16**	**0.54**	**0.51**	**4.89**	**1.24**	**1.10**
MW-6R	**5 YR AVERAGE**	**1801**	**6.77**	**8.53**	**206.7**	**0.202**	**69.77**	**1318**	**44.6**	**0.76**	**3.05**	**138.38**	**0.52**	**0.51**	**4.05**	**1.30**	**4.85**
MW-7	**5 YR AVERAGE**	**713**	**6.88**	**0.08**	**15.8**	**0.029**	**4.30**	**327**	**340.6**	**0.76**	**6.21**	**21.45**	**0.52**	**0.51**	**2.25**	**1.05**	**1.10**
MW-8	**5 YR AVERAGE**	**647**	**6.71**	**0.17**	**18.4**	**0.029**	**3.49**	**298**	**223.9**	**0.76**	**3.05**	**12.50**	**0.47**	**0.51**	**2.25**	**1.05**	**1.10**
MW-9R	**5 YR AVERAGE**	**771**	**7.11**	**0.34**	**37.4**	**0.029**	**38.10**	**452**	**115.4**	**0.76**	**3.05**	**34.07**	**0.52**	**0.51**	**2.25**	**1.05**	**7.09**
MW-10	**5 YR AVERAGE**	**833**	**7.00**	**1.08**	**29.5**	**0.026**	**21.13**	**457**	**59.1**	**0.76**	**3.05**	**41.49**	**0.47**	**0.51**	**2.25**	**1.05**	**1.65**
MW-11	**5 YR AVERAGE**	**744**	**7.27**	**0.30**	**21.0**	**0.026**	**55.14**	**461**	**331.9**	**0.76**	**3.05**	**24.82**	**0.47**	**0.51**	**2.25**	**1.05**	**1.45**
MW-12	**5 YR AVERAGE**	**654**	**7.07**	**1.79**	**44.0**	**0.031**	**25.22**	**511**	**133.4**	**0.76**	**3.37**	**30.74**	**0.52**	**0.51**	**2.25**	**1.05**	**5.41**

LEGEND
Yellow = Outside 3 Std Deviations of Background Average
Boxed = Outside Applicable Groundwater Standard

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
MELBOURNE LANDFILL AND RECYCLING CENTER COMPARED TO SHALLOW SURFICIAL BACKGROUND AT SARNO LANDFILL
MAY 2013 THROUGH OCTOBER 2017

PARAMETER	SAMPLING DATE	IRON	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC
STANDARD UNITS		300 µg/L** µg/L	15 µg/L* µg/L	2 µg/L* µg/L	100 µg/L* µg/L	50 µg/L* µg/L	100 µg/L** µg/L	160 mg/L* mg/L	2 µg/L* µg/L	49 µg/L*** µg/L	5000 µg/L** µg/L
Sarno Shallow Surficial Background Well											
MW-16S	**5 YR AVERAGE**	**436.69**	**2.32**	**0.05**	**1.63**	**4.35**	**1.25**	**8.93**	**0.28**	**10.71**	**4.75**
	std dev	**722**	**0.59**	**0.00**	**1.19**	**1.88**	**0.00**	**4.53**	**0.08**	**3.86**	**0.79**
	3x std dev	**2167**	**1.76**	**0.00**	**3.56**	**5.64**	**0.00**	**13.60**	**0.24**	**11.59**	**2.37**
	upper range	**2603**	**4.07**	**0.05**	**5.18**	**9.99**	**1.25**	**22.53**	**0.51**	**22.30**	**7.12**
Melbourne Surficial Compliance Wells											
MW-2	**5 YR AVERAGE**	**493.9**	**0.80**	**0.0224**	**2.64**	**3.25**	**0.15**	**80.9**	**0.29**	**7.26**	**8.0**
MW-4R	**5 YR AVERAGE**	**680.8**	**0.80**	**0.0158**	**3.42**	**3.25**	**0.15**	**114.3**	**0.29**	**8.10**	**8.0**
MW-5R	**5 YR AVERAGE**	**6270**	**0.80**	**0.0162**	**5.06**	**3.25**	**0.15**	**165.9**	**0.29**	**7.80**	**8.0**
MW-6R	**5 YR AVERAGE**	**582.4**	**0.80**	**0.0115**	**3.96**	**3.25**	**0.15**	**99.8**	**0.29**	**5.77**	**8.0**
MW-7	**5 YR AVERAGE**	**4453**	**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**13.9**	**0.29**	**5.48**	**8.0**
MW-8	**5 YR AVERAGE**	**2497**	**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**17.0**	**0.29**	**2.86**	**11.38**
MW-9R	**5 YR AVERAGE**	**5995**	**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**22.5**	**0.29**	**2.48**	**8.0**
MW-10	**5 YR AVERAGE**	**12792**	**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**25.8**	**0.29**	**1.75**	**24.21**
MW-11	**5 YR AVERAGE**	**2225**	**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**18.1**	**0.29**	**1.72**	**63.47**
MW-12	**5 YR AVERAGE**	**1150**	**0.80**	**0.0133**	**1.88**	**3.25**	**0.15**	**24.7**	**0.29**	**3.20**	**19.44**

LEGEND
Yellow = Outside 3 Std Deviations of Background Average
Boxed = Outside Applicable Groundwater Standard

Table of Groundwater Data
5 Years Compiled

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
MELBOURNE LANDFILL AND RECYCLING CENTER COMPARED TO SHALLOW SURFICIAL BACKGROUND AT SARNO LANDFILL
MAY 2013 THROUGH OCTOBER 2017

PARAMETER	SAMPLING DATE	CONDUCTIVITY (FIELD)	pH (FIELD)	AMMONIA NITROGEN	CHLORIDE	NITRATE NITROGEN	SULFATE	TOTAL DISSOLVED SOLIDS	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CHROMIUM	COBALT	COPPER	IRON
STANDARD		(1)	6.5-8.5 S.U.**	2.8 mg/L***	250 mg/L**	10 mg/L*	250 mg/L**	500 mg/L**	200 µg/L**	6 µg/L*	10 µg/L*	2000 µg/L*	4 µg/L*	5 µg/L*	100 µg/L*	140µg/L***	1000 µg/L**	300 µg/L**
UNITS		uS/cm	S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sarno Shallow Surficial Background Well																		
MW-16S	6/4/2013	647	6.21	0.083	9.8	7.9	32.3	435		0.25	2.5	40.4	0.25	0.25	1.25	2.5	1.25	80.8
MW-16S	11/25/2013	473	6.36	0.01	9.6	5.9	26.5	329		0.25	2.5	33.5	0.25	0.25	1.25	2.5	1.25	234
MW-16S	6/11/2014	748	6.79	0.18	9.2	0.9	45	472		0.25	2.5	45.3	0.25	0.25	1.25	2.5	1.25	454
MW-16S	12/11/2014	627	6.37	0.24	7.8	0.32	-	437		0.54	2.5	27.8	0.25	0.25	1.25	2.5	1.25	117
MW-16S	6/18/2015	720	6.64	0.28	6.4	1	-	422		0.25	2.5	40.1	0.25	0.25	1.25	2.5	1.25	368
MW-16S	12/9/2015	663	6.32	0.17	5.4	3.4	-	443		0.25	2.5	39.6	0.25	0.25	1.25	2.5	1.25	146
MW-16S	5/19/2016	767	6.67	0.45	5.4	1.3	-	470		0.25	2.5	42.8	0.25	0.25	1.25	2.5	1.25	390
MW-16S	12/2/2016	685	6.65	0.26	5.1	1.2	-	433		0.76	2.5	35.2	0.25	0.25	1.25	2.5	1.25	82.3
MW-16S	6/14/2017	769	6.43	0.92	4.8	0.0125	-	435		0.58	2.5	32.8	0.25	0.25	1.25	2.5	1.25	2450
MW-16S	12/18/2017	654	6.47	0.37	6.5	1.2	-	436		0.25	1.25	25	0.60	0.6	1.25	1.25	3.1	44.8
AVERAGE		**675.3**	**6.49**	**0.30**	**7.0**	**2.3**	**34.6**	**431.2**	**Not Sampled**	**0.36**	**2.38**	**36.25**	**0.29**	**0.29**	**1.25**	**2.38**	**1.44**	**436.69**
	std dev	**87.7**	**0.19**	**0.25**	**2.0**	**2.62**	**9.5**	**39.3**		**0.19**	**0.40**	**6.55**	**0.11**	**0.11**	**0.00**	**0.40**	**0.59**	**722**
	3x std dev	**263**	**0.56**	**0.76**	**5.9**	**7.86**	**28.4**	**118**		**0.57**	**1.19**	**19.7**	**0.33**	**0.33**	**0.00**	**1.19**	**1.76**	**2167**
	upper range	**938**	**7.05**	**1.06**	**12.9**	**10.17**	**63.0**	**549**		**0.93**	**3.56**	**55.9**	**0.62**	**0.62**	**1.25**	**3.56**	**3.19**	**2603**
Melbourne Compliance Wells - Shallow Surficial																		
MW-2	5/17/2013	1900	6.99	4.7	300	0.026	35	1200	34	0.55	3.05	89.9	0.47	0.55	2.25	1.05	1.1	81.1
MW-2	10/9/2013	1587	6.7	2.7	190	0.026	89	990	34	0.55	3.05	90.3	1.04	0.55	2.25	1.05	1.1	887
MW-2	4/9/2014	1083	6.69	3.3	160	0.026	7.4	710	34	0.55	3.05	47.5	0.47	0.55	2.25	1.05	1.1	1220
MW-2	10/8/2014	1480	6.4	0.71	180	0.13	52	1100	34	0.55	12	76.1	0.47	0.55	2.25	1.05	1.1	354
MW-2	4/23/2015	970	7.31	2.7	100	0.026	26	600	34	0.55	6.79	30.6	0.47	0.55	2.25	1.05	1.1	1230
MW-2	10/13/2015	1246	7.14	0.4	140	0.026	88	880	34	0.55	3.05	105	0.47	0.55	2.25	1.05	1.1	241
MW-2	4/18/2016	1916	7.65	3.3	100	0.026	7.4	540	72.3	0.55	3.05	53.3	0.47	0.45	2.25	1.05	1.1	115
MW-2	10/13/2016	1085	7.0	1.4	110	0.46	220	1100	77.6	1.25	16.4	104	0.47	0.45	2.25	1.05	1.1	118
MW-2	4/19/2017	1110	7.55	2.6	90	0.026	21	620	34	1.25	3.05	49.9	0.47	0.45	2.25	1.05	1.1	108
MW-2	10/18/2017	1324	6.84	1.1	130	0.12	75	910	34	1.25	12	72.8	0.47	0.45	2.25	1.05	1.1	585
AVERAGE		**1370**	**7.03**	**2.29**	**150.0**	**0.089**	**62.1**	**865**	**42.2**	**0.76**	**6.55**	**71.94**	**0.53**	**0.51**	**2.25**	**1.05**	**1.1**	**493.9**
MW-4R	5/17/2013	2800	6.8	6.4	450	0.026	2.7	1800	34	0.55	3.05	163	0.47	0.55	5.12	1.05	1.1	473
MW-4R	10/10/2013	1472	6.96	1.1	120	0.026	120	970	34	0.55	3.05	99.4	1.08	0.55	2.25	1.05	1.1	517
MW-4R	4/9/2014	1582	6.73	5.2	120	0.026	210	1100	34	0.55	3.05	107	0.47	0.55	2.25	1.05	1.1	325
MW-4R	10/9/2014	1319	6.66	1.6	120	0.18	130	860	299	0.55	7.42	133	0.47	0.55	2.25	1.05	1.1	278
MW-4R	4/23/2015	2142	7.21	14	230	0.026	230	1500	564	0.55	11.3	155	0.47	0.55	5.12	1.05	1.1	1300
MW-4R	10/13/2015	1642	7.27	4.7	200	0.026	140	1300	229	1.18	18	165	0.47	0.55	2.25	1.05	1.1	1280
MW-4R	4/19/2016	1437	6.95	10	200	0.026	150	1300	348	0.55	9.26	180	0.47	0.45	6.41	1.05	1.1	849
MW-4R	10/13/2016	1024	7.0	0.92	69	0.026	100	770	189	1.25	6.27	117	0.47	0.45	2.25	1.05	1.1	510
MW-4R	4/19/2017	2789	7.38	13	320	0.026	82	1700	147	1.25	8.72	226	0.47	0.45	10.1	1.05	1.1	554
MW-4R	10/18/2017	1589	6.77	0.82	160	0.026	130	1100	87.9	1.25	10.6	130	0.47	0.45	2.25	1.05	1.1	722
AVERAGE		**1780**	**6.97**	**5.77**	**198.9**	**0.041**	**129.5**	**1240**	**196.6**	**0.82**	**8.07**	**147.54**	**0.53**	**0.51**	**4.03**	**1.05**	**1.10**	**680.8**

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MELBOURNE LANDFILL AND RECYCLING CENTER COMPARED TO SHALLOW SURFICIAL BACKGROUND AT SARNO LANDFILL
MAY 2013 THROUGH OCTOBER 2017

PARAMETER	SAMPLING DATE	CONDUCTIVITY (FIELD)	pH (FIELD)	AMMONIA NITROGEN	CHLORIDE	NITRATE NITROGEN	SULFATE	TOTAL DISSOLVED SOLIDS	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CHROMIUM	COBALT	COPPER	IRON
STANDARD		(1)	6.5-8.5 S.U.**	2.8 mg/L***	250 mg/L**	10 mg/L*	250 mg/L**	500 mg/L**	200 µg/L**	6 µg/L*	10 µg/L*	2000 µg/L*	4 µg/L*	5 µg/L*	100 µg/L*	140µg/L***	1000 µg/L**	300 µg/L**
UNITS		uS/cm	S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-5R	5/17/2013	2940	6.75	12	490	0.026	0.7	2000	34	0.55	3.05	133	0.47	0.55	2.25	1.05	1.1	2120
MW-5R	10/10/2013	3037	6.42	16	480	0.11	21	1900	34	0.55	3.05	150	1.14	0.55	5.91	1.05	1.1	4680
MW-5R	4/9/2014	2929	6.09	12	570	0.026	4.4	2200	71.5	0.55	3.05	166	0.47	0.55	5.1	1.05	1.1	9330
MW-5R	10/9/2014	1586	6.76	1.2	160	0.62	190	1100	34	0.55	6.71	58.9	0.47	0.55	2.25	1.05	1.1	361
MW-5R	4/23/2015	2867	6.57	12	530	0.026	37	2000	34	0.55	3.05	162	0.47	0.55	5.58	1.05	1.1	11600
MW-5R	10/13/2015	2507	6.81	9.5	530	0.13	61	2000	34	0.55	3.05	140	0.47	0.55	5.73	1.05	1.1	8990
MW-5R	4/19/2016	1757	6.6	28	730	0.026	1.2	2500	34	0.55	3.05	187	0.47	0.45	8.74	2.96	1.1	14900
MW-5R	10/13/2016	1077	7.03	1.5	96	0.44	270	1100	34	1.25	11.5	68.3	0.47	0.45	2.25	1.05	1.1	2040
MW-5R	4/19/2017	3982	7.27	37	690	0.026	4.7	2400	34	1.25	3.05	167	0.47	0.45	8.79	1.05	1.1	7800
MW-5R	10/18/2017	1584	7.13	2.3	160	0.53	160	1100	34	1.25	24.3	69.4	0.47	0.45	2.25	1.05	1.1	882
AVERAGE		**2427**	**6.74**	**13.15**	**443.6**	**0.196**	**75.0**	**1830**	**37.8**	**0.76**	**6.39**	**130.16**	**0.54**	**0.51**	**4.89**	**1.24**	**1.10**	**6270**
MW-6R	5/17/2013	1710	6.97	4.8	150	0.026	85	1100	34	0.55	3.05	107	0.956	0.55	2.25	1.05	37.5	556
MW-6R	10/10/2013	1815	6.58	7.1	150	0.026	57	1200	34	0.55	3.05	146	0.47	0.55	2.25	1.05	1.1	502
MW-6R	4/9/2014	2350	6.25	11	250	0.026	20	1700	79.5	0.55	3.05	164	0.47	0.55	4.56	1.05	1.1	514
MW-6R	10/9/2014	906	6.6	0.62	42	0.1	48	590	34	0.55	3.05	94.8	0.47	0.55	2.25	1.05	1.1	186
MW-6R	4/23/2015	3158	6.69	16	370	0.026	0.035	1900	34	0.55	3.05	147	0.47	0.55	6.72	1.05	1.1	1300
MW-6R	10/14/2015	1300	6.74	3.4	140	0.076	77	1000	34	0.55	3.05	133	0.47	0.55	2.25	1.05	1.1	491
MW-6R	4/19/2016	1079	6.79	21	480	0.36	0.65	2300	34	0.55	3.05	188	0.47	0.45	8.69	2.4	1.1	1140
MW-6R	10/13/2016	1491	6.92	0.36	63	0.66	240	840	34	1.25	3.05	134	0.47	0.45	2.25	1.05	1.1	114
MW-6R	4/19/2017	3076	7.41	21	360	0.026	20	1800	34	1.25	3.05	162	0.47	0.45	7	1.05	1.1	889
MW-6R	10/18/2017	1123	6.7	0.00365	62	0.69	150	750	94.9	1.25	3.05	108	0.47	0.45	2.25	2.24	2.21	132
AVERAGE		**1801**	**6.77**	**8.53**	**206.7**	**0.202**	**69.77**	**1318**	**44.6**	**0.76**	**3.05**	**138.38**	**0.52**	**0.51**	**4.05**	**1.30**	**4.85**	**582.4**
MW-7	5/16/2013	775	6.89	0.098	26	0.026	2	540	266	0.55	14.3	10	0.47	0.55	2.25	1.05	1.1	11500
MW-7	10/9/2013	453	6.62	0.013	6.3	0.026	4.7	310	132	0.55	3.05	24.4	0.982	0.55	2.25	1.05	1.1	1730
MW-7	4/8/2014	389	6.51	0.00365	8.7	0.026	5.4	280	216	0.55	3.05	26.6	0.47	0.55	2.25	1.05	1.1	1160
MW-7	10/8/2014	313	6.4	0.057	2.6	0.026	0.47	200	87.9	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	481
MW-7	4/22/2015	494	6.73	0.13	13	0.026	3	310	1900	0.55	13.6	10	0.47	0.55	2.25	1.05	1.1	11100
MW-7	10/14/2015	295	6.69	0.00365	4.7	0.026	1.3	240	147	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	721
MW-7	4/18/2016	978	7.2	0.062	11	0.026	4.3	330	321	0.55	3.05	45.6	0.47	0.45	2.25	1.05	1.1	6550
MW-7	10/12/2016	303	6.72	0.012	6.1	0.026	0.39	240	153	1.25	3.05	20.7	0.47	0.45	2.25	1.05	1.1	1110
MW-7	4/18/2017	2800	8.43	0.37	69	0.052	21	550	91.9	1.25	12.8	30.6	0.47	0.45	2.25	1.05	1.1	9690
MW-7	10/17/2017	326	6.58	0.00365	11	0.026	0.48	270	91.1	1.25	3.05	26.6	0.47	0.45	2.25	1.05	1.1	488
AVERAGE		**713**	**6.88**	**0.08**	**15.8**	**0.029**	**4.30**	**327**	**340.6**	**0.76**	**6.21**	**21.45**	**0.52**	**0.51**	**2.25**	**1.05**	**1.10**	**4453**
MW-8	5/16/2013	762	7.11	0.38	54	0.026	17	490	77	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	6130
MW-8	10/9/2013	330	6.41	0.028	7.9	0.026	4.6	270	141	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	436
MW-8	4/9/2014	532	6.68	0.14	34	0.026	6.4	380	111	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	639
MW-8	10/8/2014	156	5.72	0.034	1.5	0.026	0.87	130	349	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	571
MW-8	4/22/2015	609	7.01	0.32	12	0.026	1.1	470	252	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	6390
MW-8	10/14/2015	153	6.15	0.14	6.5	0.026	1	180	404	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	914
MW-8	4/18/2016	1004	7.17	0.26	21	0.026	2.6	310	194	0.55	3.05	35	0.47	0.45	2.25	1.05	1.1	3640
MW-8	10/12/2016	189	6.3	0.01	6.1	0.026	0.8	210	384	1.25	3.05	10	0.47	0.45	2.25	1.05	1.1	1900
MW-8	4/18/2017	2558	8.51	0.43	29	0.052	0.09	360	85.4	1.25	3.05	10	0.47	0.45	2.25	1.05	1.1	3940
MW-8	10/17/2017	181	5.99	0.00365	12	0.026	0.42	180	242	1.25	3.05	10	0.47	0.45	2.25	1.05	1.1	406
AVERAGE		**647**	**6.71**	**0.17**	**18.4**	**0.029**	**3.49**	**298**	**223.9**	**0.76**	**3.05**	**12.50**	**0.47**	**0.51**	**2.25**	**1.05**	**1.10**	**2497**

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MAY 2013 THROUGH OCTOBER 2017

PARAMETER	SAMPLING DATE	CONDUCTIVITY (FIELD)	pH (FIELD)	AMMONIA NITROGEN	CHLORIDE	NITRATE NITROGEN	SULFATE	TOTAL DISSOLVED SOLIDS	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CHROMIUM	COBALT	COPPER	IRON
STANDARD		(1)	6.5-8.5 S.U.**	2.8 mg/L***	250 mg/L**	10 mg/L*	250 mg/L**	500 mg/L**	200 µg/L**	6 µg/L*	10 µg/L*	2000 µg/L*	4 µg/L*	5 µg/L*	100 µg/L*	140µg/L***	1000 µg/L**	300 µg/L**
UNITS		uS/cm	S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-9R	5/16/2013	874	6.98	0.26	57	0.026	66	520	34	0.55	3.05	35.3	0.47	0.55	2.25	1.05	61	9950
MW-9R	10/9/2013	624	6.78	0.36	26	0.026	31	420	34	0.55	3.05	30.4	0.984	0.55	2.25	1.05	1.1	7170
MW-9R	4/9/2014	633	6.58	0.33	38	0.026	39	430	34	0.55	3.05	32.3	0.47	0.55	2.25	1.05	1.1	4570
MW-9R	10/8/2014	648	6.52	0.045	30	0.026	31	410	34	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	3220
MW-9R	4/22/2015	803	7.07	0.37	52	0.026	46	480	227	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	2040
MW-9R	10/13/2015	621	7.23	0.48	32	0.026	38	440	110	0.55	3.05	38.5	0.47	0.55	2.25	1.05	1.1	6830
MW-9R	4/18/2016	1400	7.35	0.58	21	0.026	26	370	498	0.55	3.05	57	0.47	0.45	2.25	1.05	1.1	9280
MW-9R	10/12/2016	570	7.05	0.42	23	0.026	22	390	115	1.25	3.05	42.5	0.47	0.45	2.25	1.05	1.1	5330
MW-9R	4/18/2017	749	8.51	0.5	34	0.052	49	480	34	1.25	3.05	39.9	0.47	0.45	2.25	1.05	1.1	7260
MW-9R	10/17/2017	783	7.06	0.04	61	0.026	33	580	34	1.25	3.05	44.8	0.47	0.45	2.25	1.05	1.1	4300
AVERAGE		**771**	**7.11**	**0.34**	**37.4**	**0.029**	**38.10**	**452**	**115.4**	**0.76**	**3.05**	**34.07**	**0.52**	**0.51**	**2.25**	**1.05**	**7.09**	**5995**
MW-10	5/16/2013	843	6.91	1.3	54	0.026	7.1	470	34	0.55	3.05	31.7	0.47	0.55	2.25	1.05	6.55	13300
MW-10	10/9/2013	826	6.63	1.4	34	0.026	24	490	34	0.55	3.05	43.9	0.47	0.55	2.25	1.05	1.1	14200
MW-10	4/9/2014	734	6.46	1.2	20	0.026	18	450	34	0.55	3.05	41	0.47	0.55	2.25	1.05	1.1	15500
MW-10	10/8/2014	866	6.36	0.87	41	0.026	53	520	34	0.55	3.05	33.7	0.47	0.55	2.25	1.05	1.1	8640
MW-10	4/22/2015	817	6.93	1.3	18	0.026	7.6	440	34	0.55	3.05	28	0.47	0.55	2.25	1.05	1.1	15800
MW-10	10/13/2015	819	7.06	0.56	36	0.026	57	560	89	0.55	3.05	46.9	0.47	0.55	2.25	1.05	1.1	6390
MW-10	4/18/2016	1471	7.23	1.2	27	0.026	2.1	400	146	0.55	3.05	61.2	0.47	0.45	2.25	1.05	1.1	19800
MW-10	10/12/2016	685	6.96	0.76	36	0.026	26	450	79.3	1.25	3.05	46.7	0.47	0.45	2.25	1.05	1.1	11300
MW-10	4/18/2017	647	8.44	1.6	12	0.026	1.5	360	34	1.25	3.05	39.1	0.47	0.45	2.25	1.05	1.1	17500
MW-10	10/17/2017	618	7.05	0.56	17	0.026	15	430	72.4	1.25	3.05	42.7	0.47	0.45	2.25	1.05	1.1	5490
AVERAGE		**833**	**7.00**	**1.08**	**29.5**	**0.026**	**21.13**	**457**	**59.1**	**0.76**	**3.05**	**41.49**	**0.47**	**0.51**	**2.25**	**1.05**	**1.65**	**12792**
MW-11	5/17/2013	441	7.03	0.18	16	0.026	3.1	290	170	0.55	3.05	10	0.47	0.55	2.25	1.05	4.56	3720
MW-11	10/9/2013	680	6.9	0.21	47	0.026	44	450	243	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	1490
MW-11	4/9/2014	563	6.68	0.38	27	0.026	27	380	204	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	3610
MW-11	10/8/2014	939	6.7	0.039	16	0.026	91	600	225	0.55	3.05	29.2	0.47	0.55	2.25	1.05	1.1	783
MW-11	4/22/2015	643	7.31	0.66	14	0.026	37	390	127	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	4270
MW-11	10/13/2015	975	7.41	0.1	27	0.026	160	710	681	0.55	3.05	47.1	0.47	0.55	2.25	1.05	1.1	1310
MW-11	4/18/2016	1083	7.59	0.73	10	0.026	22	330	639	0.55	3.05	33.1	0.47	0.45	2.25	1.05	1.1	2670
MW-11	10/12/2016	842	7.25	0.00365	25	0.026	130	640	844	1.25	3.05	49.4	0.47	0.45	2.25	1.05	1.1	523
MW-11	4/18/2017	577	8.62	0.68	6.8	0.026	7.3	290	109	1.25	3.05	10	0.47	0.45	2.25	1.05	1.1	2040
MW-11	10/17/2017	697	7.23	0.055	21	0.026	30	530	76.7	1.25	3.05	39.4	0.47	0.45	2.25	1.05	1.1	1830
AVERAGE		**744**	**7.27**	**0.30**	**21.0**	**0.026**	**55.14**	**461**	**331.9**	**0.76**	**3.05**	**24.82**	**0.47**	**0.51**	**2.25**	**1.05**	**1.45**	**2225**
MW-12	5/17/2013	1270	6.71	3.2	240	0.026	43	1300	105	0.55	3.05	89.7	0.47	0.55	2.25	1.05	44.2	5250
MW-12	10/9/2013	412	6.86	0.00365	5.6	0.026	14	300	136	0.55	3.05	10	0.992	0.55	2.25	1.05	1.1	243
MW-12	4/9/2014	443	6.64	0.00365	10	0.026	18	310	108	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	311
MW-12	10/8/2014	480	6.25	0.16	2.3	0.026	5.4	380	124	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	922
MW-12	4/23/2015	346	7.21	0.00365	4.7	0.08	11	250	109	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	941
MW-12	10/13/2015	413	7.19	0.013	1.4	0.026	7.9	310	129	0.55	3.05	10	0.47	0.55	2.25	1.05	1.1	220
MW-12	4/18/2016	1246	7.39	0.54	36	0.026	28	480	303	0.55	3.05	44.9	0.47	0.45	2.25	1.05	1.1	1920
MW-12	10/12/2016	409	6.98	0.00365	4.7	0.026	6.9	320	125	1.25	3.05	21.8	0.47	0.45	2.25	1.05	1.1	156
MW-12	4/18/2017	916	8.55	14	120	0.026	110	990	103	1.25	6.26	62	0.47	0.45	2.25	1.05	1.1	943
MW-12	10/17/2017	600	6.88	0.00365	15	0.026	8	470	91.5	1.25	3.05	39	0.47	0.45	2.25	1.05	1.1	595
AVERAGE		**654**	**7.07**	**1.79**	**44.0**	**0.031**	**25.22**	**511**	**133.4**	**0.76**	**3.37**	**30.74**	**0.52**	**0.51**	**2.25**	**1.05**	**5.41**	**1150**

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PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
MELBOURNE LANDFILL AND RECYCLING CENTER COMPARED TO SHALLOW SURFICIAL BACKGROUND AT SARNO LANDFILL
MAY 2013 THROUGH OCTOBER 2017

PARAMETER	SAMPLING DATE	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC
STANDARD		15 µg/L*	2 µg/L*	100 µg/L*	50 µg/L*	100 µg/L**	160 mg/L*	2 µg/L*	49 µg/L***	5000 µg/L**
UNITS		µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L
Sarno Shallow Surficial Background Well										
MW-16S	6/4/2013	2.5	0.05	1.25	3.75	1.25	13.3	0.25	8	5
MW-16S	11/25/2013	2.5	0.05	1.25	3.75	1.25	6.9	0.25	13.2	5
MW-16S	6/11/2014	2.5	0.05	1.25	3.75	1.25	17.5	0.25	9.2	5
MW-16S	12/11/2014	2.5	0.05	1.25	3.75	1.25	14.3	0.25	11.6	5
MW-16S	6/18/2015	2.5	0.05	1.25	3.75	1.25	9.1	0.25	10.6	5
MW-16S	12/9/2015	2.5	0.05	1.25	3.75	1.25	6.8	0.25	14.8	5
MW-16S	5/19/2016	2.5	0.05	1.25	3.75	1.25	6.8	0.25	8.6	5
MW-16S	12/2/2016	2.5	0.05	1.25	3.75	1.25	4.8	0.25	15.6	5
MW-16S	6/14/2017	2.5	0.05	1.25	3.75	1.25	5.5	0.50	2.5	5
MW-16S	12/18/2017	0.65	0.05	5	9.7	1.25	4.3	0.25	13	2.5
AVERAGE		**2.32**	**0.05**	**1.63**	**4.35**	**1.25**	**8.93**	**0.28**	**10.71**	**4.75**
	std dev	**0.59**	**0.00**	**1.19**	**1.88**	**0.00**	**4.53**	**0.08**	**3.86**	**0.79**
	3x std dev	**1.76**	**0.00**	**3.56**	**5.64**	**0.00**	**13.60**	**0.24**	**11.59**	**2.37**
	upper range	**4.07**	**0.05**	**5.18**	**9.99**	**1.25**	**22.53**	**0.51**	**22.30**	**7.12**
Melbourne Compliance Wells - Shallow Su										
MW-2	5/17/2013	0.8	0.0115	1.6	3.25	0.145	147	0.29	3.45	8
MW-2	10/9/2013	0.8	0.0115	1.6	3.25	0.145	124	0.29	10.3	8
MW-2	4/9/2014	0.8	0.0115	1.6	3.25	0.145	91.1	0.29	7.24	8
MW-2	10/8/2014	0.8	0.0492	4.03	3.25	0.145	59.6	0.29	6.62	8
MW-2	4/23/2015	0.8	0.0115	1.6	3.25	0.145	64.4	0.29	5.51	8
MW-2	10/13/2015	0.8	0.0115	3.54	3.25	0.145	66.6	0.29	15.3	8
MW-2	4/18/2016	0.8	0.0115	1.6	3.25	0.145	64.8	0.29	6.66	8
MW-2	10/13/2016	0.8	0.0661	4.13	3.25	0.145	65.8	0.29	5.49	8
MW-2	4/19/2017	0.8	0.0115	1.6	3.25	0.145	63.3	0.29	3.34	8
MW-2	10/18/2017	0.8	0.0278	5.1	3.25	0.145	62.3	0.29	8.67	8
AVERAGE		**0.80**	**0.0224**	**2.64**	**3.25**	**0.15**	**80.9**	**0.29**	**7.26**	**8.0**
MW-4R	5/17/2013	0.8	0.0115	1.6	3.25	0.145	223	0.29	7.06	8
MW-4R	10/10/2013	0.8	0.0115	1.6	3.25	0.145	77.6	0.29	10.1	8
MW-4R	4/9/2014	0.8	0.0115	1.6	3.25	0.145	83	0.29	8.21	8
MW-4R	10/9/2014	0.8	0.0548	1.6	3.25	0.145	51.9	0.29	6.15	8
MW-4R	4/23/2015	0.8	0.0115	4.03	3.25	0.145	130	0.29	9.56	8
MW-4R	10/13/2015	0.8	0.0115	5.95	3.25	0.145	96.2	0.29	9.5	8
MW-4R	4/19/2016	0.8	0.0115	4.17	3.25	0.145	145	0.29	8.97	8
MW-4R	10/13/2016	0.8	0.0115	1.6	3.25	0.145	52	0.29	3.54	8
MW-4R	4/19/2017	0.8	0.0115	5.89	3.25	0.145	210	0.29	10.4	8
MW-4R	10/18/2017	0.8	0.0115	6.12	3.25	0.145	74.5	0.29	7.54	8
AVERAGE		**0.80**	**0.0158**	**3.42**	**3.25**	**0.15**	**114.3**	**0.29**	**8.10**	**8.0**

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MAY 2013 THROUGH OCTOBER 2017

PARAMETER	SAMPLING DATE	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC
STANDARD		15 µg/L*	2 µg/L*	100 µg/L*	50 µg/L*	100 µg/L**	160 mg/L*	2 µg/L*	49 µg/L***	5000 µg/L**
UNITS		µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L
MW-5R	5/17/2013	0.8	0.0115	3.4	3.25	0.145	185	0.29	6.89	8
MW-5R	10/10/2013	0.8	0.0115	1.6	3.25	0.145	189	0.29	9.69	8
MW-5R	4/9/2014	0.8	0.0115	4.88	3.25	0.145	210	0.29	8.08	8
MW-5R	10/9/2014	0.8	0.0458	5.38	3.25	0.145	63.1	0.29	3.64	8
MW-5R	4/23/2015	0.8	0.0115	4.09	3.25	0.145	183	0.29	6.97	8
MW-5R	10/13/2015	0.8	0.0115	5.37	3.25	0.145	175	0.29	7.89	8
MW-5R	4/19/2016	0.8	0.0115	4.43	3.25	0.145	255	0.29	13.2	8
MW-5R	10/13/2016	0.8	0.0246	6.39	3.25	0.145	60.8	0.29	1	8
MW-5R	4/19/2017	0.8	0.0115	5.79	3.25	0.145	265	0.29	13.1	8
MW-5R	10/18/2017	0.8	0.0115	9.28	3.25	0.145	73.2	0.29	7.56	8
AVERAGE		**0.80**	**0.0162**	**5.06**	**3.25**	**0.15**	**165.9**	**0.29**	**7.80**	**8.0**
MW-6R	5/17/2013	0.8	0.0115	1.6	3.25	0.145	74.1	0.29	5.2	8
MW-6R	10/10/2013	0.8	0.0115	1.6	3.25	0.145	85.8	0.29	6.94	8
MW-6R	4/9/2014	0.8	0.0115	5.43	3.25	0.145	133	0.29	8	8
MW-6R	10/9/2014	0.8	0.0115	1.6	3.25	0.145	28.6	0.29	2.2	8
MW-6R	4/23/2015	0.8	0.0115	4.19	3.25	0.145	152	0.29	7.57	8
MW-6R	10/14/2015	0.8	0.0115	3.88	3.25	0.145	64.8	0.29	6.61	8
MW-6R	4/19/2016	0.8	0.0115	5.3	3.25	0.145	195	0.29	9.8	8
MW-6R	10/13/2016	0.8	0.0115	5.78	3.25	0.145	54.2	0.29	1	8
MW-6R	4/19/2017	0.8	0.0115	5.2	3.25	0.145	168	0.29	9.34	8
MW-6R	10/18/2017	0.8	0.0115	5.02	3.25	0.145	42.7	0.29	1	8
AVERAGE		**0.80**	**0.0115**	**3.96**	**3.25**	**0.15**	**99.8**	**0.29**	**5.77**	**8.0**
MW-7	5/16/2013	0.8	0.0115	1.6	3.25	0.145	36.1	0.29	11.3	8
MW-7	10/9/2013	0.8	0.0115	1.6	3.25	0.145	7.25	0.29	6.27	8
MW-7	4/8/2014	0.8	0.0115	1.6	3.25	0.145	8.53	0.29	5.67	8
MW-7	10/8/2014	0.8	0.0115	1.6	3.25	0.145	3.07	0.29	1	8
MW-7	4/22/2015	0.8	0.0115	1.6	3.25	0.145	13.4	0.29	19.6	8
MW-7	10/14/2015	0.8	0.0115	1.6	3.25	0.145	4.8	0.29	1	8
MW-7	4/18/2016	0.8	0.0115	1.6	3.25	0.145	15.6	0.29	6.94	8
MW-7	10/12/2016	0.8	0.0115	1.6	3.25	0.145	4.86	0.29	1	8
MW-7	4/18/2017	0.8	0.0115	1.6	3.25	0.145	36.6	0.29	1	8
MW-7	10/17/2017	0.8	0.0115	1.6	3.25	0.145	8.92	0.29	1	8
AVERAGE		**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**13.9**	**0.29**	**5.48**	**8.0**
MW-8	5/16/2013	0.8	0.0115	1.6	3.25	0.145	39.4	0.29	2.87	8
MW-8	10/9/2013	0.8	0.0115	1.6	3.25	0.145	7.05	0.29	3.52	8
MW-8	4/9/2014	0.8	0.0115	1.6	3.25	0.145	32.3	0.29	2.33	8
MW-8	10/8/2014	0.8	0.0115	1.6	3.25	0.145	2.46	0.29	1	8
MW-8	4/22/2015	0.8	0.0115	1.6	3.25	0.145	23	0.29	10.8	8
MW-8	10/14/2015	0.8	0.0115	1.6	3.25	0.145	5.13	0.29	1	8
MW-8	4/18/2016	0.8	0.0115	1.6	3.25	0.145	18.7	0.29	2.91	8
MW-8	10/12/2016	0.8	0.0115	1.6	3.25	0.145	4.94	0.29	1	20.2
MW-8	4/18/2017	0.8	0.0115	1.6	3.25	0.145	30.6	0.29	2.18	8
MW-8	10/17/2017	0.8	0.0115	1.6	3.25	0.145	6.26	0.29	1	29.6
AVERAGE		**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**17.0**	**0.29**	**2.86**	**11.38**

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MAY 2013 THROUGH OCTOBER 2017

PARAMETER	SAMPLING DATE	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	SODIUM	THALLIUM	VANADIUM	ZINC
STANDARD		15 µg/L*	2 µg/L*	100 µg/L*	50 µg/L*	100 µg/L**	160 mg/L*	2 µg/L*	49 µg/L***	5000 µg/L**
UNITS		µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L
MW-9R	5/16/2013	0.8	0.0115	1.6	3.25	0.145	25.8	0.29	2.22	8
MW-9R	10/9/2013	0.8	0.0115	1.6	3.25	0.145	19.5	0.29	4.66	8
MW-9R	4/9/2014	0.8	0.0115	1.6	3.25	0.145	18.2	0.29	2.57	8
MW-9R	10/8/2014	0.8	0.0115	1.6	3.25	0.145	18	0.29	2.04	8
MW-9R	4/22/2015	0.8	0.0115	1.6	3.25	0.145	31.8	0.29	2.3	8
MW-9R	10/13/2015	0.8	0.0115	1.6	3.25	0.145	20	0.29	2.08	8
MW-9R	4/18/2016	0.8	0.0115	1.6	3.25	0.145	17.4	0.29	4.79	8
MW-9R	10/12/2016	0.8	0.0115	1.6	3.25	0.145	19.4	0.29	1	8
MW-9R	4/18/2017	0.8	0.0115	1.6	3.25	0.145	20	0.29	1	8
MW-9R	10/17/2017	0.8	0.0115	1.6	3.25	0.145	35.2	0.29	2.12	8
AVERAGE		**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**22.5**	**0.29**	**2.48**	**8.0**
MW-10	5/16/2013	0.8	0.0115	1.6	3.25	0.145	27.2	0.29	2.64	8
MW-10	10/9/2013	0.8	0.0115	1.6	3.25	0.145	29.2	0.29	3.5	24
MW-10	4/9/2014	0.8	0.0115	1.6	3.25	0.145	28.2	0.29	1	21.4
MW-10	10/8/2014	0.8	0.0115	1.6	3.25	0.145	32.2	0.29	1	27.6
MW-10	4/22/2015	0.8	0.0115	1.6	3.25	0.145	26.6	0.29	1	46.7
MW-10	10/13/2015	0.8	0.0115	1.6	3.25	0.145	35.7	0.29	1	17.5
MW-10	4/18/2016	0.8	0.0115	1.6	3.25	0.145	21.2	0.29	2.82	29.2
MW-10	10/12/2016	0.8	0.0115	1.6	3.25	0.145	25.3	0.29	1	16.9
MW-10	4/18/2017	0.8	0.0115	1.6	3.25	0.145	17.8	0.29	1	8
MW-10	10/17/2017	0.8	0.0115	1.6	3.25	0.145	14.4	0.29	2.57	42.8
AVERAGE		**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**25.8**	**0.29**	**1.75**	**24.21**
MW-11	5/17/2013	0.8	0.0115	1.6	3.25	0.145	13.9	0.29	1	8
MW-11	10/9/2013	0.8	0.0115	1.6	3.25	0.145	29	0.29	3.44	46.3
MW-11	4/9/2014	0.8	0.0115	1.6	3.25	0.145	18.4	0.29	1	41.3
MW-11	10/8/2014	0.8	0.0115	1.6	3.25	0.145	19.7	0.29	1	158
MW-11	4/22/2015	0.8	0.0115	1.6	3.25	0.145	15.9	0.29	1	58.2
MW-11	10/13/2015	0.8	0.0115	1.6	3.25	0.145	25	0.29	2.28	87.8
MW-11	4/18/2016	0.8	0.0115	1.6	3.25	0.145	12.1	0.29	3.22	42.9
MW-11	10/12/2016	0.8	0.0115	1.6	3.25	0.145	19.4	0.29	1	131
MW-11	4/18/2017	0.8	0.0115	1.6	3.25	0.145	9.39	0.29	1	8
MW-11	10/17/2017	0.8	0.0115	1.6	3.25	0.145	18	0.29	2.25	53.2
AVERAGE		**0.80**	**0.0115**	**1.60**	**3.25**	**0.15**	**18.1**	**0.29**	**1.72**	**63.47**
MW-12	5/17/2013	0.8	0.0115	1.6	3.25	0.145	98	0.29	4.4	8
MW-12	10/9/2013	0.8	0.0115	1.6	3.25	0.145	6.09	0.29	3.82	8
MW-12	4/9/2014	0.8	0.0115	1.6	3.25	0.145	9.52	0.29	2.23	8
MW-12	10/8/2014	0.8	0.0295	1.6	3.25	0.145	3.8	0.29	2.68	22.2
MW-12	4/23/2015	0.8	0.0115	1.6	3.25	0.145	2.93	0.29	2.32	8
MW-12	10/13/2015	0.8	0.0115	1.6	3.25	0.145	2.51	0.29	1	8
MW-12	4/18/2016	0.8	0.0115	1.6	3.25	0.145	23	0.29	6.69	8
MW-12	10/12/2016	0.8	0.0115	1.6	3.25	0.145	3.37	0.29	1	39.1
MW-12	4/18/2017	0.8	0.0115	4.37	3.25	0.145	86.2	0.29	6.87	26.3
MW-12	10/17/2017	0.8	0.0115	1.6	3.25	0.145	12	0.29	1	58.8
AVERAGE		**0.80**	**0.0133**	**1.88**	**3.25**	**0.15**	**24.7**	**0.29**	**3.20**	**19.44**

LEGEND
Yellow = Outside 3 Std Deviations of Background Average
Boxed = Outside Applicable Groundwater Standard

Summary Table of Surface Water Data Over 5 Years

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
SARNO ROAD CLASS III LANDFILL
JUNE 2013 THROUGH DECEMBER 2017

PARAMETER		CONDUCTIVITY (FIELD)	AMMONIA NITROGEN	UN-IONIZED AMMONIA	BIOCHEMICAL OXYGEN DEMAND	CHEMICAL OXYGEN DEMAND	CHLORIDE	NITRATE NITROGEN	TOTAL PHOS-PHORUS as P	SULFATE	TOTAL DISSOLVED SOLIDS
CLASS III (FRESH) SURFACE WATER STANDARD		<50 % increase or <1275 max	NA	0.02 mg/L	NA	NA	NA	NA	NA	NA	NA
GROUNDWATER STANDARD		(1)	2.8 mg/L***	(1)	(1)	(1)	(1)	10 mg/L*	(1)	250 mg/L**	500 mg/L**
UNITS		uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sarno Surface Waters											
SW-1 / SW-1R	**5 YR AVERAGE**	**942**	**0.43**	**0.03**	**7.3**	**133**	**NS**	**0.027**	**0.037**	**40.6**	**598**
	std dev	**83**	**0.54**	**0.03**	**1.9**	**17**	**NS**	**0.015**	**0.020**	**3.6**	**78**
	3 x std dev	**250**	**1.61**	**0.09**	**5.8**	**51**	**NS**	**0.044**	**0.061**	**10.7**	**234**
	upper range	**1192**	**2.04**	**0.12**	**13.1**	**185**	**NS**	**0.071**	**0.097**	**51.3**	**832**
Melbourne Surface Water											
SW-1	**5 YR AVERAGE**	**1586**	**6.47**	**0.26**	**18.4**	**323**	**174**	**0.030**	**0.79**	**125**	**1150**
Sarno Surface Waters											
SW-2	**5 YR AVERAGE**	**1041**	**3.24**	**0.04**	**5.0**	**105**	**NS**	**0.048**	**0.117**	**30**	**721**
SW-3	**5 YR AVERAGE**	**1036**	**0.67**	**0.05**	**8.1**	**153**	**NS**	**0.048**	**0.072**	**66**	**688**
SW-4 / SW-4R	**5 YR AVERAGE**	**845**	**0.78**	**0.01**	**4.5**	**47**	**NS**	**0.047**	**0.096**	**29**	**546**
SW-7	**5 YR AVERAGE**	**1118**	**2.40**	**0.03**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

LEGEND
* = Primary Drinking Water Standard
** = Secondary Drinking Water Standard
*** = Chapter 62-777 Groundwater Cleanup Target Levels (GCTL)

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
SARNO ROAD CLASS III LANDFILL
JUNE 2013 THROUGH DECEMBER 2017

PARAMETER		TOTAL HARDNESS	TOTAL KJELDAHL NITROGEN	TOTAL ORGANIC CARBON	TOTAL SUSPENDED SOLIDS	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CHROMIUM	COPPER
CLASS III (FRESH) SURFACE WATER STANDARD		NA	NA	NA	NA	4300 µg/L	50 µg/L	NA	0.13 µg/L	CALC	CALC
GROUNDWATER STANDARD		(1)	(1)	(1)	(1)	6 µg/L*	10 µg/L*	2000 µg/L*	4 µg/L*	100 µg/L*	1000 µg/L**
UNITS		mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sarno Surface Waters											
SW-1 / SW-1R	**5 YR AVERAGE**	**200**	**4.89**	**32.1**	**30.1**	**0.59**	**3.1**	**51.1**	**0.028**	**1.25**	**0.47**
	std dev	**19**	**0.53**	**6.0**	**5.9**	**0.25**	**1.3**	**9.1**	**0.008**	**0.00**	**0.00**
	3 x std dev	**57**	**1.60**	**18.0**	**17.8**	**0.76**	**3.8**	**27.4**	**0.024**	**0.00**	**0.00**
	upper range	**257**	**6.49**	**50.1**	**47.9**	**1.35**	**6.9**	**78.5**	**0.051**	**1.25**	**0.47**
Melbourne Surface Water											
SW-1	**5 YR AVERAGE**	**451**	**15.1**	**79**	**14.4**	**3.39**	**18.4**	**68.8**	**0.047**	**4.40**	**2.23**
Sarno Surface Waters											
SW-2	**5 YR AVERAGE**	**374**	**4.7**	**30**	**34.4**	**0.33**	**3.2**	**51.9**	**0.040**	**1.88**	**0.47**
SW-3	**5 YR AVERAGE**	**276**	**4.2**	**42**	**22.0**	**0.28**	**3.3**	**41.4**	**0.035**	**1.77**	**0.47**
SW-4 / SW-4R	**5 YR AVERAGE**	**299**	**1.3**	**13**	**47.2**	**0.29**	**2.5**	**58.0**	**0.055**	**1.61**	**2.09**
SW-7	**5 YR AVERAGE**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

LEGEND
* = Primary Drinking Water Standard
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PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
SARNO ROAD CLASS III LANDFILL
JUNE 2013 THROUGH DECEMBER 2017

PARAMETER		IRON	LEAD	MERCURY	SELENIUM	SILVER	THALLIUM	VANADIUM	ZINC
CLASS III (FRESH) SURFACE WATER STANDARD		1000 µg/L	CALC	0.012 µg/L	5 µg/L	0.07 µg/L	6.3 µg/L	NA	CALC
GROUNDWATER STANDARD		300 µg/L**	15 µg/L*	2 µg/L*	50 µg/L*	100 µg/L**	2 µg/L*	49 µg/L***	5000 µg/L**
UNITS		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sarno Surface Waters									
SW-1 / SW-1R	**5 YR AVERAGE**	**72**	**2.88**	**0.0047**	**0.796**	**0.0250**	**0.250**	**3.15**	**5.62**
	std dev	**48**	**1.20**	**0.0012**	**0.372**	**0.0000**	**0.000**	**1.37**	**1.96**
	3 x std dev	**143**	**3.60**	**0.0036**	**1.117**	**0.0000**	**0.000**	**4.12**	**5.88**
	upper range	**215**	**6.48**	**0.0083**	**1.913**	**0.0250**	**0.250**	**7.27**	**11.50**
Melbourne Surface Water									
SW-1	**5 YR AVERAGE**	**430**	**0.205**	**0.0101**	**0.325**	**0.0145**	**0.029**	**1.93**	**8.34**
Sarno Surface Waters									
SW-2	**5 YR AVERAGE**	**2001**	**2.83**	**0.0027**	**0.250**	**0.0250**	**0.250**	**2.84**	**20.70**
SW-3	**5 YR AVERAGE**	**328**	**3.05**	**0.0036**	**0.433**	**0.0305**	**0.250**	**3.80**	**5.76**
SW-4 / SW-4R	**5 YR AVERAGE**	**2073**	**4.14**	**0.0037**	**0.285**	**0.0250**	**0.250**	**5.80**	**15.15**
SW-7	**5 YR AVERAGE**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

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