

ENVIRONMENTAL SAMPLING CORPORATION

Dedicated to Environmental Monitoring, Science & Technology

July 1, 2020

Mr. David Buser
Wisconsin Department of Natural Resources
2300 N. Dr. Martin Luther King Jr. Drive
Milwaukee, WI 53212

**Re: April 2020 Monitoring Event
Advanced Disposal Services Emerald Park Landfill, LLC - WDNR License No. 03290
Waukesha County, Wisconsin**

Dear Mr. Buser:

On behalf of Advanced Disposal Services Emerald Park Landfill (EPL), Environmental Sampling Corporation (ESC) has prepared this environmental monitoring report in accordance with the June 9, 2011 Southwestern Expansion Plan of Operation approval. The report provides a preliminary analysis of the cause and significance of well specific and WI Adm. Code Ch. NR140 exceedances.

ESC personnel were on site in April 2020 to conduct the following monitoring:

- Sample 44 groundwater monitoring wells including 8 subtitle D wells
- Measure 15 additional groundwater elevations
- Collect 5 gradient control sump samples
- Collect 13 surface water point samples
- Measure 26 staff gauge elevations
- Collect 1 leachate sample
- Collect 1 gas condensate lift station sample

Additional monitoring was conducted during April 2020 by site personnel:

- Record 16 leachate headwell elevations
- Collect readings from 66 landfill gas extraction wells
- Collect readings from the gas blower
- Collect readings from 11 landfill gas monitoring probes

During the April 2020 event, one gradient control sump, GSUMP-7SE, could not be sampled due to a pump malfunction. The malfunction was corrected in May 2020 and ESC personnel collected a sample at GSUMP-7SE on May 22, 2020. Information regarding the monitoring program conducted at ADS-EPL during April and May 2020 is provided in the following sections. The environmental monitoring data files and certification page for the April 2020 monitoring event and subsequent monitoring conducted in May 2020 are also provided to the GEMS Data Submittal Contact for upload to the GEMS database.

Mr. David Buser
April 2020 Monitoring Event – ADS-EPL
July 1, 2020

GROUNDWATER SAMPLING

Groundwater samples were collected from 42 of the 44 monitoring wells in April 2020. Two groundwater monitoring wells (MW-4AR and MW-4BR) were unable to be sampled during the April event because they were dry. These wells are typically dry during the semi-annual monitoring events. Pending Department concurrence, a Plan Modification will be submitted under separate cover to request a change to the current monitoring program.

All groundwater samples collected were analyzed for: alkalinity, chloride, sulfate, hardness and sodium. The subtitle D wells were also analyzed for VOCs. Groundwater samples were collected with dedicated bladder pumps, electronic submersible pumps, or dedicated bailers. Monitoring wells had a minimum of four well volumes purged or the wells were purged dry before sample collection. Samples for metals and inorganic analyses were field filtered using disposable 0.45-micron filters. All samples were placed on ice, chain-of-custody forms were established, and samples were sent to Pace Analytical Services laboratory (WI Certification #405132750) for analysis via Waltco courier service.

Field parameters, pH, specific conductivity and temperature, were measured using a Cole-Parmer dual pH/conductivity meter that was calibrated and checked in the field during the sampling event. ESC personnel also recorded groundwater elevation measurements, sample color, odor and turbidity.

ESC collected four duplicate samples DUP-01 (MW-305D), DUP-02 (MW-107A), DUP-03 (MW-106A), and DUP-04 (MW-4D) and one field blank (FB-01) for analysis. The inorganic and field parameter concentrations detected in the duplicate samples were consistent with the results from the original samples. FB-01 was collected using the distilled water utilized for equipment decontamination. Laboratory supplied trip blanks accompanied the samples collected during April 2020 event. The collection of the duplicate samples, the field blank, and the accompanying trip blank follow both the WDNR and ESC's QA/QC procedures.

In addition to the groundwater elevations from the monitoring wells that were sampled, water elevations were recorded from an additional 15 wells at the site. Groundwater elevations were generally higher than those observed during last sampling event (October 2019) and the previous April 2019 event. Groundwater elevation at two groundwater monitoring wells (MW-4AR and MW-4BR) were unable to be measured because the wells were dry during this semi-annual event. Based on elevations recorded during this event, groundwater flow in the deep wells is toward the east/northeast and in the shallow wells is toward the southwest, which are consistent with historic observations.

Exceedances

Attached are the April 2020 Exceedance Summaries. Exceedances of well-specific Preventive Action Limits (PALs) and Alternative Concentration Limits (ACLs) were determined based on standards included in the Southwestern Expansion Plan of Operation approval dated June 9, 2011. The April 2020 groundwater analytical data has been compared to these well-specific PAL and ACL standards and the NR140 PALs and Enforcement Standards (ESs). Explanations of the NR140 PAL and ES exceedances, as well as the well-specific PAL and ACL exceedances are provided below.

Groundwater Indicator PAL Exceedances

Sodium

The sodium concentrations exceeded the well-specific PALs for the samples collected from groundwater monitoring wells MW-3A, MW-3B, MW-8AR, MW-107A/DUP-02, MW-115A, and MW-121A. The concentrations of sodium at MW-8AR, MW-115, and MW-121A were consistent with data reported over the past five years and may be a result of the proximity of these wells to the haul roads and access roads which can be a source of road dust and salt. The reported concentrations of sodium in the sample collected from MW-107A/DUP-02 is increased from typical historic data and October 2019 results. This increase is likely due to this shallow well's proximity to the active construction area and new access and haul roads. The reported concentrations of sodium in the samples collected from the upgradient wells MW-3A and MW-3B were increased from typical historic data but are similar to results since April 2019. Future monitoring will help determine what, if any, trend exists.

Alkalinity

Exceedances of the well-specific PALs for alkalinity were reported in samples collected from groundwater monitoring wells: MW-5A, MW-5B, MW-115A and MW-120DR. The concentrations of alkalinity in the samples at MW-5A, MW-5B, and MW-115A were consistent with recent historic data. The concentration of alkalinity in the sample collected from MW-120DR increased from historic data, but was similar to concentrations reported since 2018. The alkalinity exceedances at MW-5A and MW-5B can be attributed to their location adjacent to a parking lot which can be the source of road dust and salt. The alkalinity concentration reported in the MW-115A sample may be a result of the proximity of the well to the haul road which can be a source of road salt and dust. The concentration of alkalinity in the sample collected from MW-120DR may be a result of fluctuations in groundwater quality due to changes in groundwater elevation or the proximity to the haul road which can be a source of road salt and dust.

Specific Conductance and Hardness

Exceedances of well-specific PALs for specific conductance and hardness were reported for samples collected from groundwater monitoring wells MW-5A, MW-5B, and DUP-02 (MW-107A). Exceedances of well-specific PALs for hardness were also reported in the samples collected from groundwater monitoring wells MW-3A, MW-8AR, MW-115A, MW-120A, MW-120DR, and MW-121A. An exceedance of the well-specific PAL for specific conductance was also reported in the sample collected from MW-107A. The April 2020 specific conductance and hardness concentrations reported for MW-5A and MW-5B were similar to or slightly reduced from recent historical data. The April 2020 hardness concentrations reported at MW-3A, MW-8AR, DUP-02 (MW-107A), MW-115A, MW-120A, MW-120DR, and MW-121A were similar to historical data. The specific conductance data reported at MW-107A/DUP-2 in April 2020 was similar to historic data reported over the past five years. The results for these wells show seasonal functions which may be a result of changes in groundwater elevation with higher concentrations in the Spring and lower concentrations during the Fall events.

Indicator parameters for samples collected from site monitoring wells generally remained within the range of historic concentrations. Well-specific exceedances of sodium, alkalinity, specific conductance and hardness are not due to migration from the landfill but rather are likely a result of construction activities and road salt/dust or spatial and temporal fluctuations in groundwater quality due to a change in groundwater elevation. No additional groundwater indicator parameter exceedances of the water quality standards were observed for any of the remaining groundwater samples collected during the April 2020 sampling event. See attached **Table 1** for a summary of groundwater indicator parameters exceedances.

Groundwater Indicator ACL and NR 140 Public Welfare Groundwater Standard Exceedances

Sulfate

Sulfate was detected at concentrations in excess of the NR140 PAL in the sample collected from MW-313D and exceeded the NR140 ES in the samples collected from MW-19AR, MW-120A, and MW-120C. Concentrations of sulfate exceeded the well-specific ACLs in the samples collected from MW-3A, MW-8AR, MW-117C, MW-121A, and MW-305C. The sulfate concentration reported in the sample collected from upgradient well MW-3A was slightly higher than typical historic data but was similar to concentrations reported in April 2019. The increased sulfate concentration at MW-3A may be due to an increase in groundwater elevation at this location. The concentrations of sulfate in the samples collected from the remaining wells were generally consistent with historic data. Sulfate is naturally occurring and is found in the glacial till of Southeastern Wisconsin. Dissolution of anhydrite, or gypsum, or the oxidation of pyrite can result in natural sulfate concentrations above the NR140 standards.

Chloride

Concentrations of chloride exceeded the NR140PAL in the samples collected from MW-5A and MW-303A and exceeded the NR140 ES in the samples collected from MW-3A and MW-115A. The chloride concentration reported in the sample collected from MW-3A was slightly higher than typical historic data and may be due to an increase in groundwater elevation at this location. The concentrations of chloride in the samples collected from the remaining wells were consistent with data reported over the past five years. The chloride concentrations in the samples collected from MW-5A and MW-115A may be attributed to road salt and dust since MW-5A is adjacent to a parking lot and MW-115A is located adjacent to the entrance road to the site. The chloride concentration at MW-303A may be related to winter salt used on the nearby 8 Mile Road/ Union Church Drive.

Exceedances of sulfate and chloride concentrations during the April 2020 sampling event have been attributed to increase in groundwater elevation, road salt and dust, or natural occurring sulfate and are not related to any migration from the landfill. There were no other ACL or PAL/ES exceedances for public welfare parameters for any of the remaining groundwater samples collected during the April 2020 sampling event. A summary of the ACL and NR 140 PAL/ES exceedances is included with this report in **Table 2**.

Volatile Organic Compounds

During the April 2020 event, VOC analyses were conducted on the samples collected from the subtitle D groundwater monitoring wells. Acetone was reported in samples collected from groundwater monitoring wells MW-4D/DUP-04, MW-8AR, MW-19AR, MW-20A, MW-115C, MW-117C, and MW-121C at concentrations less than NR140 standards. These concentrations of acetone were reported between the laboratory Limit of Detection (LOD) and Limit of Quantitation (LOQ). Concentrations between the LOD and LOQ cannot be confirmed by the laboratory and should be considered estimates. Acetone is a common laboratory contaminant; the presence of acetone in these samples is likely a result of laboratory or sample bottle contamination. No other VOCs were detected in the groundwater samples or the trip blanks during the April 2020 monitoring event.

Groundwater Conclusions

Results from the April 2020 groundwater sampling were fairly consistent with historic data and exceedances of standards are not due to migration from the landfill but may be related to spatial and temporal fluctuations in the groundwater quality due to a change in groundwater elevation. Slight variations in the concentrations of sodium, alkalinity, hardness, specific conductance, sulfate and chloride have been observed during the past several events in samples collected from select monitoring wells and may be related to changes in groundwater elevation that has likely altered the general chemistry of the groundwater. These changes may also be related to the proximity of many of these wells to road salt and dust from the haul road, access roads, and the active construction area. In general, the parameters that exceeded well-specific and NR 140 standards were consistent with previous data.

GRADIENT CONTROL SYSTEM MONITORING

Samples were collected from four gradient control sumps (GSUMP-6E, GSUMP-6W, GSUMP-7N, and GSUMP-7SC) in April 2020. GSUMP-7SE could not be sampled during the April 2020 event due to a pump malfunction. The malfunction was corrected on May 21, 2020 and a sample was collected at GSUMP-7SE on May 22, 2020. All gradient control sump samples collected in April and May 22, 2020 were analyzed for: field parameters, chloride, sulfate, hardness, alkalinity, sodium and VOCs. ESC also collected one duplicate sample (GSUMP-DUP) and one field blank (GSUMP-Field Blank) in April 2020 for analysis. GSUMP-DUP was collected at GSUMP-7N and GSUMP-Field Blank was collected near GSUMP-6W. The results from GSUMP-DUP were consistent with the results of the original sample. Trip blanks provided by the laboratory accompanied the GSUMP VOC samples from their collection back to the laboratory.

All five of the gradient control samples and the duplicate sample collected in April and on May 22, 2020 had reported concentrations of sulfate above the ES. The reported concentrations of sulfate were consistent with historic data. Sulfate is naturally occurring and is found in the glacial till of Southeastern Wisconsin. Dissolution of anhydrite, or gypsum, or the oxidation of pyrite can result in natural sulfate concentrations above the NR140 standards. A summary of the NR 140 ES exceedances is included with this report in **Table 2**.

In April 2020, no VOCs were detected in the samples collected from GSUMP-6E or the trip blank that accompanied the samples from and to the laboratory. One VOC, acetone, was detected in the samples collected from GSUMP-6W, GSUMP-7N/GSUMP-DUP, and GSUMP-7SC at concentrations less than NR140 standards and between the laboratory LOD and LOQ. Concentrations between the LOD and LOQ cannot be confirmed by the laboratory and should be considered estimates. Acetone is a common laboratory contaminant. The presence of acetone in the samples collected from GSUMP-6W, GSUMP-7N/GSUMP-DUP, and GSUMP-7SC is likely related to laboratory or sample bottle contamination.

Three VOCs, cis-1,2-dichloroethene, tetrahydrofuran, and vinyl chloride, were detected in the samples collected from GSUMP-7SE on May 22, 2020. The VOC cis-1,2-dichloroethene was detected at GSUMP-7SE at a concentration less than NR140 standards and between the laboratory LOD and LOQ. Concentrations between the laboratory LOD and LOQ cannot be confirmed by the laboratory and should be considered estimates. The VOC vinyl chloride was detected at GSUMP-7SE at a concentration between the laboratory LOD and LOQ. The concentration of vinyl chloride reported in the sample collected from GSUMP-7SE exceeded the NR140 ES; however, estimated concentrations below the LOQ are not considered exceedances in accordance with NR140.14(c). The VOC tetrahydrofuran was also detected at GSUMP-7SE at a concentration greater than the NR140 PAL.

Additional VOC samples at five gradient control sumps were taken at the request of Advanced Disposal Services on May 29, 2020. No VOCs were detected in the samples collected from GSUMP-6E, GSUMP-6W, GSUMP-7N, or the trip blank that accompanied the samples from and to the laboratory on May 29, 2020. VOCs detected at GSUMP-7SE and at GSUMP-7SC on May 29, 2020 are discussed below.

Three VOCs, benzene, cis-1,2-dichloroethene, and tetrahydrofuran, were detected in the May 29, 2020 samples collected from GSUMP-7SE. The VOCs benzene and cis-1,2-dichloroethene were detected at concentrations less than NR140 standards and between the laboratory LOD and LOQ. Concentrations between the laboratory LOD and LOQ cannot be confirmed by the laboratory and should be considered estimates. The VOC tetrahydrofuran was detected at GSUMP-7SE at a concentration greater than the NR140 PAL.

Mr. David Buser
April 2020 Monitoring Event – ADS-EPL
July 1, 2020

Three VOCs, benzene, tetrahydrofuran, and vinyl chloride, were detected in the May 29, 2020 samples from GSUMP-7SC. The VOC tetrahydrofuran was detected at a concentration less than NR140 standards and between the laboratory LOD and LOQ. The VOCs benzene and vinyl chloride were detected at concentrations between the laboratory LOD and LOQ. The concentrations of benzene and vinyl chloride detected at GSUMP-7SC exceeded the NR140 PAL and NR140 ES respectively; however, estimated concentrations below the LOQ are not considered exceedances in accordance with NR140.14(c).

After reviewing the laboratory results for both the May 22, 2020 and May 29, 2020 gradient control sump sampling, additional confirmation samples were taken by ESC at the request of Advanced Disposal Services for GSUMP-7N, GSUMP-7SE, and GSUMP-7SC on June 18, 2020. VOCs detected in the samples from GSUMP-7N, GSUMP-7SE, and GSUMP-7SC on June 18, 2020 are discussed below.

One VOC, acetone, was detected in the sample collected from GSUMP-7N on June 18, 2020 at a concentration less than NR140 standards and between the laboratory LOD and LOQ. Concentrations between the LOD and LOQ cannot be confirmed by the laboratory and should be considered estimates. Acetone is a common laboratory contaminant. The presence of acetone in the samples collected from GSUMP-7N is likely related to laboratory or sample bottle contamination.

Two VOCs, cis-1,2-dichloroethene and tetrahydrofuran, were detected in the sample collected from GSUMP-7SE on June 18, 2020. The concentrations of cis-1,2-dichloroethene and tetrahydrofuran were detected at concentrations less than NR140 standards and between the laboratory LOD and LOQ. Concentrations between the laboratory LOD and LOQ cannot be confirmed by the laboratory and should be considered estimates.

One VOC, vinyl chloride, was detected in the sample collected from GSUMP-7SC on June 18, 2020 at a concentration between the laboratory LOD and LOQ. The concentration of vinyl chloride reported in the sample collected from GSUMP-7SE exceeded the NR140 ES; however, estimated concentrations below the LOQ are not considered exceedances in accordance with NR140.14(c).

The VOCs cis-1,2-dichloroethene, benzene, and vinyl chloride have not been detected previously at GSUMP-7SE. These VOCs were detected at concentrations between the laboratory LOD and LOQ. The concentration of tetrahydrofuran detected at GSUMP-7SE was similar to the concentration reported in April 2018 during the first sampling event for this gradient control sump. Gradient control sump GSUMP-7SE has not functioned properly due to a pump malfunction until it was repaired in May 2020 or had operated under suspected dry conditions during sampling events since October 2018. The concentrations of these VOCs may be attributed to the lack of operation of the gradient control sump for over a year. Results for the sample collected from GSUMP-7SE on June 18, 2020 show VOC detections, cis-1,2-dichloroethene and tetrahydrofuran, were between the laboratory LOD and LOQ and should be considered estimates.

The VOCs benzene, tetrahydrofuran, and vinyl chloride have not been detected previously at GSUMP-7SC. These VOCs were detected at concentrations between the laboratory LOD and LOQ. Tetrahydrofuran was not detected in the confirmation sample taken on June 18, 2020 at GSUMP-7SC. One VOC, vinyl chloride, was detected between the laboratory LOD and LOQ for the sample collected from GSUMP-7SC on June 18, 2020.

Mr. David Buser
April 2020 Monitoring Event – ADS-EPL
July 1, 2020

All of the other parameters detected in the samples collected from gradient control sumps GSUMP-6E, GSUMP-6W, and GSUMP-7N in April 2020 were generally consistent with historic data; there is no indication that the landfill has affected the water quality in these gradient control sumps. VOC detections in GSUMP-7SE and GSUMP-7SC during the May and June 2020 sampling events are likely a result of lack of operation of the gradient control sumps for an extended period of time. After additional purging of GSUMP-7SE and GSUMP-7SC prior to sampling on June 18, 2020, all VOC detections were between the laboratory LOD and LOQ which cannot be confirmed by the laboratory and should be considered estimates. Additional purging prior to the next sampling event for VOCs in October 2020 for gradient control sumps GSUMP-7SE and GSUMP-7SC will help determine what, if any, trends exist. A summary of the NR 140 PAL/ES exceedances is included with this report in **Table 2**.

SURFACE WATER MONITORING

Surface water samples were collected from nine of the 13 of the surface water points in April 2020. Samples were not collected from SB-1, SW-1, SW-4 and SW-5 because the locations were dry. Samples collected from the sedimentation basins (SB-2, SB-3, SB-5, SB-6 and SB-7) were analyzed for total suspended solids. Samples collected from surface water points SW-2, SW-3, SW-22 and SW-35 were analyzed for field parameters, TSS, BOD, potassium, sodium, chloride, hardness, sulfate, and alkalinity. All surface water samples were collected with a polyethylene dipper. In addition to the surface water samples collected, 26 staff gauge elevations were also measured in April 2020. Analytical data for the samples collected from the surface water locations were generally consistent with historic data; there is no indication that the landfill has affected surface water quality.

LEACHATE SAMPLE

One leachate sample was collected in April 2020 as a grab sample using a Hach Autosampler. One trip blank prepared by the laboratory accompanied the Leachate and Gas Condensate VOC samples from their collection back to the laboratory. No VOCs were detected in the trip blank that accompanied the samples from and to the laboratory. Leachate analytical results from the monitoring conducted during the April 2020 event were consistent with historical data. A discussion of leachate quality and trends can be found in the annual report submitted in April each year.

GAS CONDENSATE LIFT STATION SAMPLE

One gas condensate lift station sample was collected during the April 2020 sampling event. The gas condensate sample was collected with dedicated sampling equipment. Results from the sample collected at the gas condensate lift station in April 2020 were consistent with historic data. One trip blank prepared by the laboratory accompanied the Leachate and Gas Condensate VOC samples from their collection back to the laboratory. No VOCs were detected in the trip blank that accompanied the samples from and to the laboratory. A discussion of gas condensate quality can be found in the annual report submitted in April each year.

Mr. David Buser
April 2020 Monitoring Event – ADS-EPL
July 1, 2020

LEACHATE HEAD WELL ELEVATIONS

The leachate head elevation data is submitted to the WDNR quarterly under separate cover.

ADS personnel recently conducted a thorough review of the data collected for the RD&D 2019 Annual Report. During this review, a number of anomalies were identified that required further evaluation. The evaluation was completed on May 18, 2020 at which time it was determined that leachate headwell levels were in excess of the regulatory requirements and have been for the monthly monitoring conducted from 2019 through May 18, 2020. Formal notification was provided to the Department in a letter dated May 21, 2020.

GAS EXTRACTION WELL AND BLOWER MONITORING

The landfill gas blower was monitored by ADS-EPL personnel for percent methane, oxygen, gas temperature, flow, and header pressure twice monthly during this reporting period. Percent methane, oxygen, gas temperature, flow, well head pressure, and valve % open were measured in the headspace of 66 gas extraction wells using an Envision gas meter. The landfill gas blower and gas extraction well data are submitted to the WDNR GEMS Data Submittal Contact quarterly under separate cover.

GAS PROBE MONITORING

Eleven gas monitoring probes were measured by ADS-EPL personnel in April 2020 for percent methane, oxygen, carbon dioxide, ambient air temperature, barometric pressure, trend in barometric pressure, ground conditions and gas pressure using an Envision gas meter. No methane was detected at the gas monitoring probes during the monitoring event in April 2020. The gas probe data are submitted to the WDNR GEMS Data Submittal Contact quarterly under separate cover.

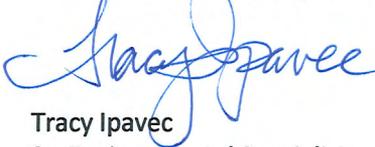
CONCLUSIONS AND RECOMMENDATIONS

Results from the groundwater, leachate, gas condensate, and surface water samples collected during the April 2020 event were generally consistent with historic data. There is no indication that the landfill has affected the environment and the site should remain in detection monitoring. The exceedances reported for samples collected from the groundwater monitoring wells were consistent with historic data and did not display any significant increasing trends. Spatial and temporal fluctuations in the groundwater quality may be due to changes in groundwater elevation. These changes may also be related to the proximity of many of these groundwater wells to road salt and dust from the haul road, access roads, and the active construction area. The sulfate concentrations that were reported at all of the gradient control system samples in April 2020 can be attributed to the sulfate that is naturally occurring and are not landfill related. The VOC exceedances that were reported at gradient control sumps GSUMP-7SE and GSUMP-7SC can likely be attributed to landfill gas migration or lack of operation of the gradient control sump for an extended period of time. These points will continue to be monitored to determine what, if any, trends exist.

Mr. David Buser
April 2020 Monitoring Event – ADS-EPL
July 1, 2020

This information satisfies the reporting requirements for the April 2020 environmental monitoring. If you have any questions or comments regarding this submittal, please contact Chad Siegle of ADS-EPL at (262) 758-3777, or the undersigned at (414) 427-5033.

Sincerely,
Environmental Sampling Corporation



Tracy Ipavec
Sr. Environmental Specialist

Attachments

cc: GEMS Data Submittal Contact: WDNR (w/CD)
Ann Bekta: WDNR (electronic copy)
Tim Curry: ADS-Midwest (electronic copy)
Kari Rabideau: ADS-Midwest (electronic copy)
Dan Otzelberger: ADS-EPL (electronic copy)
Jacob Margelofsky: ADS-GRL (electronic copy)
Chad Siegle: ADS-EPL (electronic copy)
Scott Croft: ADS-EPL (electronic copy)
ADS-EPL: File Copy
Tyler Field: Tetra Tech (electronic copy)
Jo Spear: JSA Environmental (electronic copy)
Sherren Clark: SCS Engineers (electronic copy)
Mark Slocomb: ADS-EPL Standing Committee (electronic copy)
ADS-EPL Standing Committee (electronic copy)
Frank Perugini: ESC (electronic copy)

Table 1

Groundwater Indicator Parameter Preventative Action Limits (PAL) Summary
ADS Emerald Park Landfill
License #03290
April 2020

WDNR WELL ID#	CLIENT ID	ANALYTE	WDNR CODE	SAMPLE DATE	RESULT	UNITS	EXCEEDS
018	MW-3A	Hardness	22413	4/13/20	1,370	mg/L	Site PAL (780)
018	MW-3A	Sodium	00930	4/13/20	118	mg/L	Site PAL (99)
020	MW-3B	Sodium	00930	4/13/20	95.1	mg/L	Site PAL (66)
030	MW-5A	Alkalinity	39036	4/9/20	489	mg/L	Site PAL (400)
030	MW-5A	Hardness	22413	4/9/20	876	mg/L	Site PAL (470)
030	MW-5A	Specific Conductance	00094	4/9/20	872	umhos/cm	Site PAL (870)
032	MW-5B	Alkalinity	39036	4/9/20	412	mg/L	Site PAL (260)
032	MW-5B	Hardness	22413	4/9/20	708	mg/L	Site PAL (160)
032	MW-5B	Specific Conductance	00094	4/9/20	844	umhos/cm	Site PAL (430)
048	MW-8AR	Hardness	22413	4/9/20	1,030	mg/L	Site PAL (680)
048	MW-8AR	Sodium	00930	4/9/20	25.7	mg/L	Site PAL (23)
128	MW-107A	Sodium	00930	4/13/20	80.7	mg/L	Site PAL (31)
128	MW-107A	Specific Conductance	00094	4/13/20	929	umhos/cm	Site PAL (840)
128	DUP-02	Hardness	22413	4/13/20	432	mg/L	Site PAL (430)
128	DUP-02	Sodium	00930	4/13/20	82.2	mg/L	Site PAL (31)
128	DUP-02	Specific Conductance	00094	4/13/20	929	umhos/cm	Site PAL (840)
144	MW-115A	Alkalinity	39036	4/13/20	741	mg/L	Site PAL (550)
144	MW-115A	Hardness	22413	4/13/20	908	mg/L	Site PAL (690)
144	MW-115A	Sodium	00930	4/13/20	263	mg/L	Site PAL (160)
156	MW-120A	Hardness	22413	4/13/20	752	mg/L	Site PAL (500)
161	MW-120DR	Alkalinity	39036	4/15/20	411	mg/L	Site PAL (300)
161	MW-120DR	Hardness	22413	4/15/20	639	mg/L	Site PAL (430)
162	MW-121A	Hardness	22413	4/14/20	655	mg/L	Site PAL (550)
162	MW-121A	Sodium	00930	4/14/20	59.4	mg/L	Site PAL (36)

Table 2

**Groundwater Alternative Concentration Limits (ACL), NR 140 PAL, and NR 140 Enforcement Standards (ES) Summary for Public Welfare Parameters
ADS Emerald Park Landfill
License #03290
April and May 2020**

WDNR WELL ID#	CLIENT ID	ANALYTE	WDNR CODE	SAMPLE DATE	RESULT	UNITS	EXCEEDS
018	MW-3A	Chloride	00941	4/13/20	272	mg/L	NR140 ES (250)
018	MW-3A	Sulfate	00946	4/13/20	676	mg/L	Site ACL (220)
030	MW-5A	Chloride	00941	4/9/20	164	mg/L	NR140 PAL (125)
048	MW-8AR	Sulfate	00946	4/9/20	417	mg/L	Site ACL (210)
091	MW-19AR	Sulfate	00946	4/13/20	345	mg/L	NR140 ES (250)
144	MW-115A	Chloride	00941	4/13/20	436	mg/L	NR140 ES (250)
152	MW-117C	Sulfate	00946	4/15/20	551	mg/L	Site ACL (550)
156	MW-120A	Sulfate	00946	4/13/20	428	mg/L	NR140 ES (250)
158	MW-120C	Sulfate	00946	4/15/20	304	mg/L	NR140 ES (250)
162	MW-121A	Sulfate	00946	4/14/20	351	mg/L	Site ACL (330)
196	MW-303A	Chloride	00941	4/15/20	136	mg/L	NR140 PAL (125)
212	MW-305C	Sulfate	00946	4/14/20	375	mg/L	Site ACL (190)
213	MW-313D	Sulfate	00946	4/8/20	172	mg/L	NR140 PAL (125)
516	GSUMP-6E	Sulfate	00946	4/13/20	801	mg/L	NR140 ES (250)
517	GSUMP-6W	Sulfate	00946	4/13/20	765	mg/L	NR140 ES (250)
518	GSUMP-7N	Sulfate	00946	4/13/20	533	mg/L	NR140 ES (250)
518	GSUMP-DUP	Sulfate	00946	4/13/20	510	mg/L	NR140 ES (250)
519	GSUMP-7SE	Sulfate	00946	5/22/20	500	mg/L	NR140 ES (250)
519	GSUMP-7SE	Tetrahydrofuran	81607	5/22/20	39.3	ug/L	NR140 PAL (10)
519	GSUMP-7SE	Tetrahydrofuran	81607	5/29/20	31.8	ug/L	NR140 PAL (10)
521	GSUMP-7SC	Sulfate	00946	4/13/20	535	mg/L	NR140 ES (250)

Notes:

The following analytes were reported at concentrations greater than NR140 standard, but less than the LOQ during the May 2020 event. This estimated concentrations below the LOQ are not considered exceedances in accordance with NR140.14(c) and are not included on the exceedance summary above.

Benzene (PAL= 0.5 ug/L): GSUMP-7SC (0.51 ug/L) on 5/29/2020.

Vinyl Chloride (ES=0.2 ug/L): GSUMP-7SC (0.64 ug/L) on 5/29/2020.

GSUMP-7SC (0.30 ug/L) on 6/18/2020.

GSUMP-7SE (0.24 ug/L) on 5/22/2020.