

ATTACHMENT 2 – EMERALD PARK LANDFILL NORTHERN EXPANSION WETLAND PRACTICABLE ALTERNATIVES ANALYSIS AND ADDENDUMS

Emerald Park Landfill, LLC - Western Expansion Practicable Alternatives Analysis, February 27, 2023

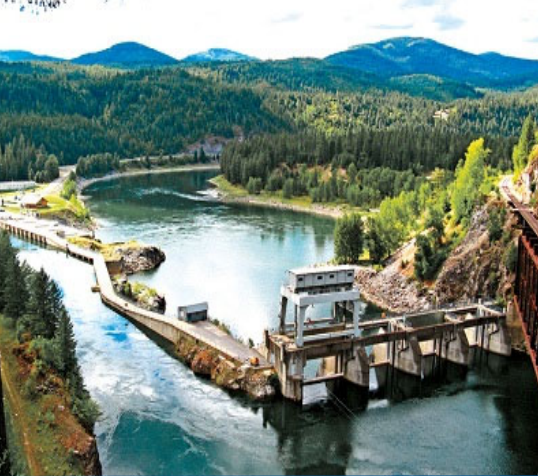
Emerald Park Landfill, LLC - Western Expansion Practicable Alternatives Analysis USACE Additional Information Response Letter, June 2, 2023

Emerald Park Landfill, LLC - Western Expansion Practicable Alternatives Analysis WDNR Additional Information Response Letter, June 6, 2023

Emerald Park Landfill, LLC – Western Expansion Practicable Alternatives Analysis, February 27, 2023

Practicable Alternatives Analysis

Emerald Park Landfill, LLC – Western Expansion





TETRA TECH

Cornerstone Environmental Group, LLC – a Tetra Tech Company

8413 Excelsior Drive, Suite 160

Madison, Wisconsin 53717

tetratech.com

Practicable Alternatives Analysis

Emerald Park Landfill, LLC – Western Expansion

#4211445
February 27, 2023

PREPARED FOR

Emerald Park Landfill, LLC
W124 S10629 S124th Street
Muskego, Wisconsin, 51350



PREPARED BY

**Cornerstone Environmental Group, LLC -
a Tetra Tech Company**
8413 Excelsior Drive, Suite 160
Madison, Wisconsin 53717

TABLE OF CONTENTS

1.0 PROJECT PURPOSE AND SCOPE	0
1.1 Introduction	0
1.1.1 Wetland Avoidance.....	0
1.2 Project Purpose.....	1
1.3 Limitations	1
2.0 EXISTING CONDITIONS	2
2.1 Property Description.....	2
2.2 Landfilling	2
2.3 Wetland Delineation	3
2.4 Surface Water Bodies	4
3.0 ALTERNATIVE 1 - PROPOSED WESTERN EXPANSION (SELECTED OPTION)	4
3.1 Summary of Selected Option	4
3.2 Summary of Initial Site Report	4
3.3 Environmental Assessment	5
3.4 Economic Assessment.....	6
3.5 Logistical Assessment.....	6
3.6 Design, Construction, Operating, and Long-Term Care Assessment	6
3.7 Conclusion	7
4.0 EVALUATION OF OTHER ALTERNATIVES	7
4.1 Summary.....	7
4.2 Alternative 2 - PROPOSED WESTERN EXPANSION WITH CURRENT POO BUILDOUT	7
4.2.1 Summary of Alternative	7
4.2.2 Environmental Assessment.....	7
4.2.3 Economic Assessment	7
4.2.4 Logistical Assessment	8
4.2.5 Design, Construction, Operating, and Long-Term Care Assessment.....	8
4.2.6 Conclusion	8
4.3 Alternative 3 – Northern Expansion	8
4.3.1 Summary of Alternative	8
4.3.2 Environmental Assessment.....	9
4.3.3 Economic Assessment	9
4.3.4 Logistical Assessment.....	9

4.3.5 Design, Construction, Operating, and Long-Term Care Assessment..... 10

4.3.6 Conclusion 10

4.4 Alternative 4 – Southern Expansion..... 10

4.4.1 Summary of Alternative 10

4.4.2 Environmental Assessment..... 11

4.4.3 Economic Assessment 11

4.4.4 Logistical Assessment..... 11

4.4.5 Design, Construction, Operating, and Long-Term Care Assessment..... 11

4.4.6 Conclusion 12

4.5 Alternative 5 – Northwestern Expansion..... 12

4.5.1 Summary of Alternative 12

4.5.2 Environmental Assessment..... 12

4.5.3 Economic Assessment 13

4.5.4 Logistical Assessment..... 13

4.5.5 Design, Construction, Operating, and Long-Term Care Assessment..... 13

4.5.6 Conclusion 14

4.6 Alternative 6 – No Action..... 14

4.6.1 Summary of Alternative 14

4.6.2 Needs Assessment..... 14

4.6.3 Environmental Assessment..... 15

4.6.4 Economic Assessment 15

4.6.5 Logistical Assessment..... 15

4.6.6 Design, Construction, Operating, and Long-Term Care Assessment..... 15

4.6.7 Conclusion 15

4.7 Alternative 7 – Greenfield Landfill 16

5.0 PRACTICABLE ALTERNATIVES CONCLUSIONS 16

6.0 ANALYSIS OF SELECTED OPTION IMPACTS ON WETLANDS 17

6.1 Impact to Functional Value of Wetlands 17

6.2 Wetland Protection Criteria (per NR 103.03(2))..... 17

6.3 Potential Secondary Impacts 18

6.3.1 Storm Water..... 18

6.3.2 Construction Impacts..... 18

6.3.3 Other Environmental Consequences 19

6.4 Wetland Areas of Special Natural Resource Interests (per NR 103.04)..... 19

6.5 Conclusion 19

7.0 PLANNED MITIGATION OF WETLAND IMPACTS..... 20

7.1 Minimize Effects of Landfill Expansion on Adjacent Wetlands 20

7.2 Mitigation of Wetland Impacts..... 20

LIST OF TABLES

Table 1:	Summary of Alternatives Comparison
Table 2:	Proposed Wetland and Navigable and Non-Navigable Agricultural Drainageway Impacts

LIST OF FIGURES

Figure 1:	Site Vicinity Map
Figure 2:	Existing Conditions
Figure 3:	Alternative 1 - Proposed Western Expansion
Figure 4:	Alternative 2 - Proposed Western Expansion with POO Buildout
Figure 4a	Alternative 2 – Proposed Western Expansion with POO Buildout & Base Grades
Figure 5:	Alternative 3 – Northern Expansion
Figure 6:	Alternative 4 – Southern Expansion
Figure 7:	Alternative 5 – Northwestern Expansion
Figure 8:	Alternative 6 – No Expansion
Figure 9:	Wetland Mitigation Bank – Parcel Overview
Figure 10:	Wetland Mitigation Bank – 2002 and 2019 Plant Communities
Figure 11:	Regional Solid Waste Management Alternatives
Figure 12:	Preliminary Watershed Boundary
Figure 13:	Proposed Stream Realignment

APPENDICES

Appendix A:	Correspondence
Appendix B:	Previous Wetland Delineation Reports
Appendix C:	Wetlands Functional Values Assessment (part of the 2015 wetland delineation report)
Appendix D:	Wetlands Mitigation Summary Form
Appendix E:	Endangered Species Review

1.0 PROJECT PURPOSE AND SCOPE

1.1 INTRODUCTION

Emerald Park Landfill, LLC, owns and operates the Emerald Park Landfill (EPL) located in the City of Muskego, Wisconsin. The facility currently receives municipal solid waste and nonhazardous industrial waste from the major municipalities and industries. The majority of the waste that is disposed of at EPL originates from the following counties in Wisconsin: Jefferson, Kenosha, Milwaukee, Ozaukee, Racine, Rock, Walworth, Washington, and Waukesha. The location of EPL and the existing site conditions are shown in Figures 1 and 2, respectively.

EPL is proposing a Western Expansion (expansion) to the existing EPL that includes approximately 29.3 acres of horizontal expansion that is currently a mixture of undeveloped wooded area, wetland, upland areas, and agricultural land. The proposed expansion is a contiguous expansion on the western edge of the existing landfill to be located entirely within land owned by EPL. The expansion would include the vertical overlay of an existing approximately 23.1-acre permitted landfill area that is currently utilized for waste disposal, stock piling and other purposes.

Portions of eight wetlands will be directly impacted by the currently permitted EPL remaining to be constructed (1.27 acres) and the proposed expansion if approved (14.81 acres) totaling approximately 16.08 acres of impacted wetlands. The proposed stream realignment (0.26 acres) is not included in this total, it will be replaced as part of the individual permit application. The stream realignment application is required due to the proposed impacts of approximately 1060 linear feet of a navigable manmade agricultural drainageway as a result of the proposed expansion see Figure 13.. Agricultural drainageways and wetlands located west and north of the proposed expansion will not be directly impacted because of the proposed surface water management controls for the expansion resulting in no measurable impacts to off-site surface water features. Given that the project will result in direct impacts to more than 0.10 acre of wetlands and because the expansion would not be water or wetland dependent, a Practicable Alternatives Analysis (PAA) is required by the Wisconsin Department of Natural Resources (WDNR) under NR 103, Wisconsin Administrative Code.

This PAA compares the proposed expansion at EPL to six alternatives for achieving the goal of increasing landfill disposal capacity for the EPL service area while minimizing environmental impacts to the area and maximizing benefits to the local communities. The selected expansion alternative and each of the six alternatives were evaluated based on NR 103 criteria and account for environmental, economic, social, and technical considerations. A summary of results of the criteria used to evaluate alternatives is included in Table 1. The alternatives evaluated are as follows:

- Alternative No. 1 – Proposed Western Expansion
- Alternative No. 2 – Proposed Western Expansion with Current POO buildout
- Alternative No. 3 – Northern Expansion
- Alternative No. 4 – Southern Expansion
- Alternative No. 5 – Northwestern Expansion
- Alternative No. 6 – No Expansion
- Alternative No. 7 – Greenfield Landfill

1.1.1 Wetland Avoidance

Note that Wetland Avoidance was not evaluated as a potential alternative to the proposed expansion, as this was previously evaluated in 2011. The 2011 Southwest Horizontal Expansion for EPL originally proposed to directly impact wetlands located west of the landfill footprint at that time. At the request of the WDNR, the permitted Southwestern Expansion boundary was revised in order to avoid impacts to wetlands with the understanding that these wetlands would be impacted in the future due to future landfill expansions. This is illustrated by the

approved nonlinear limits of waste along the west side of Phases 7 Southwest (constructed) and Phase 7 Southwest B (not constructed) and Phase 8 (Figures 2 and 8).

The scope of this PAA is based upon Ch. NR 103; WDNR Solid Waste Guidance on Ch. NR 103; Section 404; EPA's 404(b) (1) guidelines; ss. 281.36 (3m) and (3n), Wis. Stats; and prior communications with WDNR and United States Army Corps of Engineers (USACE).

1.2 PROJECT PURPOSE

The project will result in direct and potentially indirect impacts to more than 0.10 acres of wetlands and because the expansion would not be water or wetland dependent, a Practicable Alternatives Analysis (PAA) is required by the Wisconsin Department of Natural Resources (WDNR) under NR 103, Wisconsin Administrative Code.

This PAA evaluates the proposed expansion at EPL against six alternatives for practicality in achieving the goal of increasing landfill disposal capacity for the EPL service area while minimizing environmental impacts to the area and maximizing benefits to the local communities. This expansion is necessary to allow EPL to provide uninterrupted, competitive, efficient, cost-effective, and environmentally sound waste disposal, recycling, and composting services to the service area of the landfill. The Feasibility Report for the Western Expansion was completed and submitted to the WDNR in January 2014. The Feasibility Report included an evaluation of need for the proposed expansion. The WDNR issued completeness of the Feasibility Report in April 2014. Tetra Tech updated the determination of need for the site as part of this PAA submittal and is discussed further in Section 4.5.2.

The proposed additional landfill capacity must be located on lands that are adjacent to the EPL and owned by EPL to reduce the overall footprint of the area by allowing use of existing landfill infrastructure and expanding in both horizontal and vertical directions. The planning area for this proposed expansion at EPL is limited to the north by the existing closed Future Parkland Development, Inc. (FPDI) Landfill (owned by EPL) and compost facility built in 2020, to the east by the existing Metro Landfill (owned by Waste Management of Wisconsin, Inc. (WMWI)) and State Highway 45, to the south by navigable waters, higher quality wetlands, a large screening berm, and residences, and to the northwest by higher quality wetlands and navigable waters.

1.3 LIMITATIONS

The work product included herein was undertaken in full conformity with generally accepted professional consulting principles and practices, and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product). Any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Tetra Tech shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work, and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

2.0 EXISTING CONDITIONS

2.1 PROPERTY DESCRIPTION

EPL is located in the South $\frac{1}{2}$ of the Northeast $\frac{1}{4}$, the East $\frac{1}{2}$ of the Southwest $\frac{1}{4}$ and the Southeast $\frac{1}{4}$ of Section 36, Township 5 North, Range 20 East, in the City of Muskego, Waukesha County, Wisconsin. The site is bounded to the east by Highway 45 (South 124th Street) and to the south by Union Church Drive (8 Mile Road), as shown in Figure 2. EPL owns approximately 630 acres of land, of which approximately 121.6 acres is licensed disposal area, accessed from South 124th Street.

The proposed expansion is located within the Southwest $\frac{1}{4}$ of Section 36, Township 5 North, Range 20 East, Waukesha County, within two 40-acre parcels owned by EPL. The entirety of the proposed expansion will be within the limits of these parcels. The limits of fill area for the proposed expansion will consist of approximately 29.3 acres added horizontally westward and 23.1 acres added vertically as an overlay on top of currently permitted waste limits.

Zoning and land use in the vicinity of EPL is predominantly agricultural, commercial, and residential. The proposed expansion is consistent with the City of Muskego's zoning ordinance. Zoning of the area of the proposed expansion is M-3: Landfill and Extractive Operations District.

The land within the proposed expansion footprint was historically developed for agricultural purposes since at least the 1930s and consisted of agricultural fields and a farmstead. The land has continued to be farmed through present day. As a result of historical farming activities, the majority of delineated wetlands within the proposed footprint consist of wet meadow and farmed wetland plant communities with a small amount of shrub-carr, forested wetland and shallow marsh.

EPL has developed an approximately 70.76-acre high-quality wetland restoration project on its property to the west of the existing EPL footprint in order to obtain wetland mitigation bank credits. The EPL wetland mitigation bank credits were released on February 14th, 2023, they provide the necessary compensation to offset impacts associated with the selected expansion option. The wetland mitigation bank parcels are shown in Figure 8a.

2.2 LANDFILLING

EPL owns, operates, and manages the EPL and the closed FPGI Landfill. The FPGI Landfill is an approximately 9-acre closed landfill located approximately 150 feet north of EPL, which accepted and disposed of foundry sand from January 1988 until September 2000.

EPL began receiving waste in November 1994 with an approved capacity of 3.6 million cubic yards. After a series of expansions, the most recent being the Southwest Expansion approved on June 9, 2011, the currently permitted facility consists of Phases 1 through 8 with a total approved capacity of 21,137,160 cubic yards. Phase 1 was closed in 2008. Phases 2 through 7 Southwest A have been constructed and are open to receive waste (active). Portions of Phases 2, 3, 4, 5 and 6 East have been closed where permitted final waste grades have been achieved (a total of approximately 42 acres). The proposed expansion would add Phase 9 west of Phase 7 Southwest and Phase 8.

Waste disposal rates at EPL have varied through its operating history as waste hauling contracts have changed and as EPL ownership has changed. Current and projected waste disposal rates are approximately 638,261 cubic yards of waste annually. The available disposal capacity of the existing permitted EPL based on recent survey data is approximately 6 million cubic yards. Based on EPL's estimated filling rate, the currently permitted facility has a remaining site life of approximately 10 years. However, the actual filling rates and site life estimates are subject to market changes and are projected to increase in the coming years. EPL recently acquired a contract and began accepting waste from the City of Racine on January 1st, 2023 which will increase the overall filling rate

and reduce the site life. Kestrel Hawk Landfill is expected to close permanently in 2023. Section 4.5.2 provides additional information regarding current and projected disposal and capacity estimates for EPL.

2.3 WETLAND DELINEATION

A wetland delineation was originally performed for areas of the EPL property which included the Western Expansion footprint in 2005 by Natural Resources Consulting, Inc. (NRC). The wetland boundaries were revised by Stantec Consulting Services, Inc. (Stantec) and received WDNR concurrence in 2009, as shown in Figure 2. The 2009 wetland boundaries subsequently determined the shape of the Southwestern Expansion that was approved on June 9, 2011. For permitting purposes of the proposed Western Expansion, a more recent delineation of the project area was required.

A Wetland & Waterway Delineation Report was prepared for the proposed expansion area by Stantec dated December 10, 2014. The Stantec delineation report identified 12 wetlands (W1, W2, W2A, W3, W4, W5, W6, W7, W8, W9, W10, and W11) within and near the proposed expansion footprint. During an on-site wetland boundary confirmation with the WDNR and USACE on May 18, 2015, the wetland boundaries were slightly revised as follows:

1. An eastern lobe of W2A was expanded roughly 18 feet further east per the field discussion;
2. Wetlands W5 and W6 were merged following the old ditch-line between them, resulting in a new name “W5/6” for the new single polygon;
3. An eastern lobe of W1 was added as represented by sample point W1-8w. Sample point W1-8u was also completed immediately east of the new wetland lobe; and
4. W12 was added in the southeast corner of the project site, determined using sample points W12-1w and W12-1u.

The wetland plant community boundaries were also updated in the 2015 wetland delineation. Shrub carr was added to wetland W10, the east lobes of W2A and W1 were extended to show the additional farmed wetlands, and wetland W12 was added as wet meadow. The 12 resulting wetlands (W1, W2, W2A, W3, W4, W5/6, W7, W8, W9, W10, W11, and W12) are shown on Figure 2. The WDNR and USACE confirmed that the revised wetland boundaries as shown on the Stantec wetland delineation map dated May 20, 2015 were acceptable.

In general, the 2015 wetland delineation expanded the size of the 2009 delineated wetlands and identified additional wetlands west of the currently permitted waste footprint. The likely reason for this difference in delineated wetlands from 2009 to 2015 is a result of approved development in this area. Between 2009 and 2015, approved landfill operations activities within Phase 7, Phase 7 Southwest, and Phase 8 footprints included clearing and grubbing of nearly 10 acres of previously undeveloped wetland or upland areas. The increased development, although constructed, managed, and permitted in accordance with applicable codes and regulations, increased the amount of storm water runoff thereby affecting the hydrology of the immediately surrounding area and subsequently created additional wetland areas. Although landfill affiliated operations within these areas have continued through present day, the amount of land disturbance and development since 2015 has been minimal and by extension, the impacts to hydrology have also been minimal. No other significant land use changes have occurred within the surrounding area since the 2015 delineation concurrence.

The 2015 wetland project was re-delineated by Tetra Tech in September of 2021 resulting in no changes to the wetland boundaries established by Stantec in 2015. After the boundaries were confirmed by Tetra Tech and a Wetland Delineation Addendum was submitted to the WDNR on November 24, 2021, Concurrence of the wetland boundaries from the WDNR was received on January 14, 2022.

Copies of the WDNR and USACE correspondence regarding wetland delineation are included in Appendix A. Copies of the Wetland Delineation Reports are provided in Appendix B.

2.4 SURFACE WATER BODIES

Several surface water bodies are present across the EPL property, but none are within the project area as shown on Figure 2. There are seven surface water ponds (P1 – P7). Three of these are manmade surface water ponds (P1, P2 and P6). The remaining four are natural surface water ponds, generally located within wetland areas.

There are five manmade agricultural drainageways (D1, S1/D2, D3, D4 and S2) located on the EPL property. Two navigability determinations made by the WDNR have been recorded for the property. The first navigability determination was performed by the WDNR during a site visit on December 7, 2007 which identified 3,695 linear feet of D2 as navigable and 860 linear feet of D4 as navigable.

The second navigability determination by the WDNR was performed during a site visit on September 23, 2014 which assigned an additional 746 linear feet of the manmade agricultural drainageway D2 as navigable, for a total of 4,441 linear feet of navigability. Manmade agricultural drainageway D2 was renamed S1 after the 2014 navigability determination. Navigability determinations were not reported for the remaining agricultural drainageways.

Two of the drainageways (S1 and S2) are unnamed tributaries to Big Muskego Lake and the Fox River. S1 is a first order waterway (WBIC 5038269) and is associated with wetland W2 and W2A. S2 is a second order waterway (WBIC 5038471) that is contiguous with wetland W8. Streams S1 and S2 generally flow northerly and connect outside the project area to the northwest adjacent to the wetland mitigation bank.

Table 2 identifies the linear feet of both navigable and non-navigable manmade agricultural drainageways within the EPL property boundaries. Table 2 identifies the linear feet of both navigable and non-navigable manmade agricultural drainageways impacted by the proposed expansion.

3.0 ALTERNATIVE 1 - PROPOSED WESTERN EXPANSION (SELECTED OPTION)

3.1 SUMMARY OF SELECTED OPTION

EPL's selected option is the Alternative 1 proposed expansion footprint located directly west and contiguous with the currently permitted EPL. The proposed expansion footprint provides for approximately 29.3 acres of contiguous lateral waste disposal area west of the existing landfill with an additional 23.1 acres of vertical expansion, equating to approximately 7.8 million cubic yards of design capacity. Figure 3 shows the Alternative 1 western expansion footprint.

The proposed expansion limits of waste is constrained by high quality wetlands and a navigable waterway to the north, by the existing EPL to the east, and by Union Church Drive and residences to the south. The west side of the proposed expansion limits are limited by a high-power transmission line.

The proposed expansion will be filled contiguously with Phases 1-8, along the western edge of the permitted Phase 7 South-West and Phase 8 of the EPL. In accordance with NR 504.05(3), the proposed expansion will add waste disposal capacity without exceeding 15 years of site life. The proposed expansion will add approximately 7.8 million cubic yards of waste capacity which will add approximately 9 years of site life, based on estimated filling rates. The proposed expansion is expected to be developed in several phases which includes added area to existing phases.

3.2 SUMMARY OF INITIAL SITE REPORT

The Initial Site Report (ISR) was prepared for the Southwestern Horizontal Expansion by RMT and submitted to the WDNR on December 22, 2005. The Southwestern Horizontal Expansion initially included the footprint of the

Western Expansion. The ISR reviewed the existing land use information, regional geotechnical information, waste characterization, locational criteria, and contained a conceptual design of the proposed expansion. The EPL received a letter from the WDNR dated January 26, 2006, stating that additional information was needed to complete the ISR. Then EPL submitted the additional information to the WDNR in a report dated February 17, 2006. The WDNR responded to EPL in an ISR Opinion letter dated May 18, 2006, identifying potential locational and performance criteria constraints. The constraints were addressed by EPL in the 2014 Feasibility Report and subsequent addenda and documents.

In a letter from the WDNR dated June 6, 2011, Ann Coakley indicated that EPL would not be required to submit a new ISR for the proposed Southwestern Expansion (which initially included the footprint of the Western Expansion), and that the ISR submitted on December 22, 2005, for the Southwestern Horizontal Expansion would suffice (see Appendix A).

3.3 ENVIRONMENTAL ASSESSMENT

The selected option (Alternative 1) minimizes impacts to the environment and minimizes surface water runoff disturbance. The surface water ponds servicing the existing EPL are not anticipated to be impacted by the proposed expansion. The manmade surface water pond P6 located southeast of the Phase 8 footprint will be directly impacted when the currently permitted Phase 8 is constructed, not as part of the proposed expansion.

The proposed expansion area is currently utilized to support landfill operations, for agricultural and undeveloped land consisting of wetlands and upland areas..

A WDNR endangered resources review request was completed by Tetra Tech. Based on the WDNR response letter dated November 26, 2019 (renewed 9/13/2022), the site is located outside of the known maternity roost tree and hibernacula areas for the Northern Long-eared bat. The WDNR requested that if erosion matting must be used for the project, a biodegradable product is preferred in order to protect wildlife. No further actions were required by the WDNR. Tetra Tech also utilized the United States Fish and Wildlife Service (US FWS) Information for Planning and Consultation (IPaC) project planning tool to assist with the US FWS environmental review process. An official species list was provided by IPaC for the project area. The site is located outside of the critical habitat area for the Poweshiek Skipperling and as previously identified by the WDNR, will not have impacts to the Northern Long-Eared Bat. The Eastern Prairie Fringed Orchid was identified as a threatened species in this area; however, the project area does not support wet to mesic prairie or wetland communities and due to the majority of the site previously being converted for agricultural use, impacts to this species are anticipated to be minimal. Based on the results of the evaluation, no further actions are required. Correspondence regarding endangered species and designated critical habitats is included in Appendix E.

The selected option would result in the direct filling of approximately 14.81 acres of wetlands. This includes all or portions of wetlands W1, W2, W3, W4, W7 and W12. The total area of directly impacted wetlands includes the areas within the proposed expansion limits of waste, perimeter berm and limits of construction. It should be noted that some wetlands within the proposed expansion footprint, adjacent to the currently permitted EPL, will have already been impacted during construction of the currently permitted EPL. These include portions of W1, W2, and all of W3, W4, W7 and W12 with a direct impact area of approximately 1.27 acres. Additional discussion regarding the wetland impacts incurred as part of the construction of the currently permitted EPL is provided in Section 4.5.

EPL has developed an approximately 70.76-acre high-quality restoration project, including approximately 53 acres of wetland and 17 acres of upland/prairie wetland buffer. EPL has committed significant time, effort, and funds to restore and enhance historical wetlands that are upstream and in the immediate vicinity of Big Muskego Lake. This project would provide an opportunity to replace the total 14.81 acres of low to medium functional value affected by the development of the proposed expansion with significantly more acres of higher quality wetlands and native upland buffer. A more detailed assessment of these wetlands and the proposed mitigation program are provided in Sections 6 and 7 of this report.

This option also impacts approximately 1060 feet of a navigable manmade agricultural drainageway (S1) located within the proposed expansion. As suggested during meetings with the WDNR, EPL will apply for a Chapter 30 permit to realign the course of the drainageway by constructing a stream along the west side of the proposed expansion to replace the impacted navigable portion of the drainageway, and to transport water collected in Sedimentation Basin No. 9 to upstream areas of S1. Presently, surface water controls for the existing landfill drain to these same wetlands through existing piping and ditches.

The development of this alternative includes an extensive storm water management system. This system would be designed to replace the flood and storm water attenuation, water quality, and wildlife habitat functions of the impacted wetlands.

Wetlands and manmade agricultural drainageways located north, southwest, and west of the proposed expansion are not expected to be directly impacted. Surface water management controls are planned for the expansion that will result in no measurable impacts to off-site surface water features. The proposed expansion will be located, designed, and operated to avoid potential adverse impacts to the manmade agricultural drainageways and wetland areas.

3.4 ECONOMIC ASSESSMENT

The proposed Alternative 1 Expansion is of adequate capacity and dimension to justify the capital and operational investment for EPL. The cost for construction and operation is practicable due to the proposed footprint being located adjacent to the existing EPL and allowing use of existing infrastructure (entrance facility, scale, office, roads, gas processing facility, leachate disposal processing, etc.). Reasonable construction and operations costs allow competitive waste disposal fees thereby avoiding adverse economic impacts to citizens and industries that currently use EPL for managing their solid waste. With the exception of Waste Management Metro RDF, which is located immediately east of EPL, utilizing other landfills would likely require waste to be hauled on average an additional 10 to 50 miles for disposal. If the proposed expansion is not developed, it would likely increase waste disposal rates at other surrounding landfills due to the lack of pricing competition that EPL currently provides to the service area.

Additional money brought into the landfill would be returned to the local economy in the form of host fees, services and materials purchased, and wages paid to EPL staff, resulting in positive, stimulating, and increasing effects on the local economy.

3.5 LOGISTICAL ASSESSMENT

Logistically, the Alternative 1 can utilize the existing landfill entrance, existing office, existing maintenance facility, and the existing truck scale. In addition, leachate connections to the above ground storage tank will be utilized along with the existing infrastructure for landfill gas collection and use. No major site features or infrastructure would require relocation with this proposed expansion.

3.6 DESIGN, CONSTRUCTION, OPERATING, AND LONG-TERM CARE ASSESSMENT

The Alternative 1 Expansion incorporates an area that is currently used for ancillary landfill activities and creates a rectangular footprint for development. This landfill configuration allows the proposed expansion to be constructed within current standards of practice and typical construction quality assurance. The footprint of the expansion is determined by applicable design criteria identified in NR 504 including final cover grades and maximum length of leachate cleanout lines. All aspects of this expansion allow liners, leachate collection, final cover, gas collection, storm water, and other performance, design, and construction criteria to conform to current

regulations and standards of practice. Excavation to subbase grades prior to liner installation will produce adequate amounts of soil for use in liners, caps, perimeter berms, and cover soils.

3.7 CONCLUSION

Considering these environmental, economic, logistical, and technical assessments, Tetra Tech finds that the proposed expansion meets the project purpose and goals and is the most practicable alternative available to continue landfill operations at EPL.

4.0 EVALUATION OF OTHER ALTERNATIVES

4.1 SUMMARY

This analysis of practicable alternatives is limited to alternatives located within the boundaries of the property where the existing EPL is located, as provided for by NR 504.04(2) (a). However, a preliminary review of potential greenfield sites was performed and is included as one of the alternatives. The property immediately east of the existing EPL is not owned by EPL and is therefore not considered in this evaluation because it is owned and operated by a waste disposal competitor. A Wetland Avoidance alternative was not evaluated as a practical alternative to the proposed expansion, as discussed in Section 1.1.1.

4.2 ALTERNATIVE 2 - PROPOSED WESTERN EXPANSION WITH CURRENT POO BUILDOUT

4.2.1 Summary of Alternative

The footprint for Alternative 2 is the same as Alternative 1 located directly west and contiguous with the currently permitted EPL but would be developed after the existing and approved EPL design from the current Plan of Operation is completely constructed. This alternative would expand the landfill after the construction of a large irregular shaped berm down the middle of the expansion area and results in no positive benefits or reduction in wetland impacts. The Alternative 2 footprint would provide for approximately 29.3 acres of contiguous lateral waste disposal area west of the existing landfill with an additional 23.1 acres of vertical expansion. Instead of the approximately 7.8 million cubic yards of design capacity the design capacity would be reduced to 6.27 million cubic yards. This alternative reduces the expansion volume by 1.58 million cubic yards while incorporating the same limits of waste and having the same impacts to the environment and wetlands. Figure 4 shows the Alternative 2 expansion footprint and base grades. Alternative 2 is the second most likely alternative after Alternative 1. The details of Alternative 2 can be seen in Figures 4 and 4a.

4.2.2 Environmental Assessment

Alternative 2 has identical environmental impacts to the selected option (proposed expansion) and minimizes impacts to the environment and minimizes surface water impacts but would shorten the site life by approximately two years. This would lead to a need for expansion in the services area two years sooner resulting in additional landfill volume being permitted earlier in time. Alternative 2 will also require the relocation of a navigable waterway and would likely utilize the wetland bank as well.

4.2.3 Economic Assessment

The construction of the large irregular shaped berm from the current EPL Plan of Operation will lead to a drastic increase the construction costs and reduce the capacity by approximately 1.58 million cubic yards. Alternative 2 does not provide adequate capacity (+ or – 7.8 million cubic yards) to justify the capital investment for EPL. Costs

of construction and operation per cubic yard of design capacity would be increased due to the landfill's smaller capacity (approximately 6.27 million cubic yards) when compared to Alternative 1. The reduced design capacity and associated site life of this alternative would result in reduced host fees to the communities and towns, loss of wages to EPL employees who all live in central Wisconsin, and the loss of local purchases for services and supplies. This alternative would also result in additional landfill capacity being developed at another location sooner than the Selected Option, which could result in 1) higher waste disposal fees for residents and industries that utilize EPL due to lack of competition and 2) increased travel costs to haulers.

4.2.4 Logistical Assessment

Logistically, the Alternative 2 can utilize the existing landfill entrance, existing office, existing maintenance facility, and the existing truck scale. In addition, leachate connections to the above ground storage tank will be utilized along with the existing infrastructure for landfill gas collection and use. No major site features or infrastructure would require relocation with this proposed expansion.

4.2.5 Design, Construction, Operating, and Long-Term Care Assessment

The Alternative 2 design incorporates an area that is currently used for ancillary landfill activities but does not create an economically feasible footprint for development. This landfill configuration does not allow the proposed expansion to be constructed within current landfill construction standards of practice and typical construction quality assurance and will be more expensive to permit and construct. The base grades shown on Figure 4a are very irregular and will cause leachate collection problems including maintaining a leachate head that is less than one foot as required by NR 504 Code.

4.2.6 Conclusion

Considering these environmental, economic, logistical, and technical assessments, Tetra Tech finds that the Alternative 2 design does not meet the project purpose and goals as well as the selected option and will lead to more environmental impacts overtime due to the reduced capacity, constructability, operational concerns, less of positive economic impact compared to the selected option because of the reduced site life and more expensive construction.

4.3 ALTERNATIVE 3 – NORTHERN EXPANSION

4.3.1 Summary of Alternative

The Northern Expansion Footprint (Alternative 3) provides for approximately 39.1 acres of contiguous lateral waste disposal area north of the existing landfill with an additional 10.0 acres of vertical expansion, equating to approximately 6.6 million cubic yards of design capacity. Figure 5 shows the Alternative 3 – Northern Expansion landfill footprint. The footprint is constrained to the north by the EPL property boundary; to the east and west by wetlands and waterways; and by the existing EPL to the south.

The Northern Expansion area was developed in 2020 and is currently operated as an active composting facility which has made this location for an expansion of EPL less practical. For Alternative 3 to be feasible, the composting operations, soil stockpiles, and closed landfill would need to be exhumed and relocated. Note that the excavation of final cover or any waste materials at a solid waste disposal facility that is no longer in operation is prohibited under NR 506.085, and would require an exemption from the WDNR. The environmental, economic, logistical, and technical impacts of Alternative 3 are described in more detail below.

4.3.2 Environmental Assessment

Alternative 3 would directly impact approximately 903 linear feet of an unnamed intermittent stream as well as approximately 2.8 acres of a wetland that surround the stream, identified on Figures 2 and 5. Other wetlands could potentially be impacted by this alternative due to the filling of the wetland and intermittent stream, as well as the relocation of other site features currently located within the Northern Expansion footprint (e.g. the closed FPD Landfill, compost facility and stockpiles). The wooded land within the Northern Expansion footprint would be cleared for grading, impacting the existing habitat by removing it entirely. A review of threatened or endangered species and designated critical habitats was not completed for the surrounding areas and would need to be completed prior to any development.

The Northern Expansion footprint would require removing the northern berm, removing the final cover, and relocating leachate and gas conveyance piping placed along the northern berm and side slopes. Exposing previously capped waste will release untreated landfill gas and therefore, increase greenhouse gas emissions. The development of the Northern Expansion would also require the removal and relocation of waste currently located within the closed FPD Landfill, as well as all liner, leachate collection, final cover, and storm water components. There is a greater risk for leachate spills during waste relocation and when relocating the leachate force main. The waste relocation would reduce the total airspace because it would have to be moved to an active landfill area.

In addition, the FPD Landfill is listed as an open site in the WDNR Environmental Repair Program (ERP) due to contamination associated with the landfill. As such, the WDNR may require additional actions to address contamination issues prior to removing the closed landfill and redeveloping the site as part of the Northern Expansion.

4.3.3 Economic Assessment

Alternative 3 does not provide adequate capacity (+ or – 7.8 million cubic yards) to justify the capital investment for EPL. Costs of construction and operation per cubic yard of design capacity would be increased due to the landfill's smaller capacity (approximately 6.6 million cubic yards) when compared to the Selected Option. The reduced design capacity and associated site life of this alternative would result in reduced host fees to the communities and towns, loss of wages to EPL employees who all live in central Wisconsin, and the loss of local purchases for services and supplies. This alternative would also result in additional landfill capacity being developed at another location sooner than the Selected Option, which could result in 1) higher waste disposal fees for residents and industries that utilize EPL due to lack of competition and 2) increased travel costs to haulers.

Furthermore, siting, permitting and documenting the relocation of the existing closed FPD Landfill, stockpiles, and recently constructed composting operations would increase this cost significantly. Additional costs would also be incurred to potentially address contamination associated with the open contamination site at the FPD Landfill and to obtain an exemption to NR 506.085 to exhume the closed FPD Landfill prior to any ground disturbance.

4.3.4 Logistical Assessment

Logistically, Alternative 3 can utilize the existing landfill entrance, existing office, existing maintenance facility, and the existing truck scale. However, a significant amount of existing infrastructure would require reconfiguration and/or relocation.

The footprint of the Northern Expansion would require that the two stockpiles, the closed FPD Landfill, and composting operations be moved to an alternate location. Furthermore, an exemption from the WDNR would be required in order to exhume the closed FPD Landfill and construct Alternative 3. The relocation process for the closed landfill would require significant planning and permitting prior to the construction of this alternative.

4.3.5 Design, Construction, Operating, and Long-Term Care Assessment

Alternative 3 presents a landfill area mostly rectangular in shape. Technically, this landfill configuration allows it to be constructed within current standards of practice and typical construction quality assurance. All aspects of this expansion allow liners, leachate collection, final cover, gas collection, storm water, and other aspects to conform to current regulations and standards of practice. Excavation to subgrade, prior to liner installation, will produce adequate amounts of soil for use in liners, caps, perimeter berms and cover soils.

Expanding north would require the entire northern berm of the existing landfill to be removed which includes removing the final cover and relocating leachate and gas conveyance piping placed along the northern berm. This would add significant construction challenges when implementing mitigation measures to reduce potential environmental impacts discussed in Section 4.2.2. Relocating the closed FPD Landfill would also require the removal of the liner and excavating waste, and would add significant planning, construction, and permitting challenges to ensure the waste is relocated in accordance with code. Also, concerns over the liner integrity at the connection between the old and new material over the long-term care period would be greater when compared to other alternatives.

The development of the Alternative 3 would include an extensive storm water management system. This system would be designed to replace and improve the flood and storm water attenuation, water quality, and wildlife habitat functions presently provided by the wetlands and stream impacted by Alternative 3.

4.3.6 Conclusion

Considering these environmental, economic, logistical, and technical assessments, Tetra Tech finds that Alternative 3 does not meet the project goals. While it does provide a technically sound design and arguably reduces environmental impacts to wetlands, Alternative 3 eliminates the recently constructed and approved compost area and does not provide sufficient waste disposal capacity to justify the development cost, increases costs due to the removal and relocation of stockpiles and the closed FPD Landfill, increases cost to potentially address environmental contamination issues associated with the open ERP site at the closed FPD Landfill to obtain an exemption from NR 506.085, and creates more logistical impacts than the Selected Option.

4.4 ALTERNATIVE 4 – SOUTHERN EXPANSION

4.4.1 Summary of Alternative

The Southern Expansion Footprint (Alternative 4) provides for approximately 32.9 acres of contiguous lateral waste disposal area south of the existing landfill with an additional 30.4 acres of vertical expansion, equating to approximately 8.95 million cubic yards of design capacity. Figure 6 shows the Alternative 4 – Southern Expansion footprint. The footprint is constrained to the north and west by the existing EPL and by the EPL property boundary to the east. The footprint is constrained to the south by code restrictions of NR 504.06(6)(b) which limit the length of leachate collection lines from the access point at one end to the toe of the opposite slope to 2,000 linear feet. The EPL property boundary extends to Union Church Drive and is followed by residences.

Portions of the Southern Expansion area are currently utilized for ancillary landfill operations such as access roads, soil stockpiling including a large screening berm, biofilters, and storm water management, while the remaining areas are undeveloped wooded, wetland, and upland areas. For Alternative 4 to be feasible, two sedimentation basins (3 and 5), associated biofilters, and a portion of the screening berm would need to be moved to a different location on the property. The environmental, economic, logistical, and technical impacts of Alternative 4 are described in more detail below.

4.4.2 Environmental Assessment

Alternative 4 would directly impact approximately 15.9 acres of generally higher quality wetlands, more than 100 feet of an unnamed intermittent stream, and approximately 171 feet of a navigable waterway consisting of a manmade agricultural ditch (D4), all located within the Southern Expansion footprint on Figures 2 and 6. A portion of the navigable waterway and a large portion of the wetlands would be eliminated in order to accommodate Alternative 4, which are comparable in quantitative impacts of the Selected Option. Other wetlands could potentially be impacted by this alternative due to the relocation of other site features such as the sedimentation basins, biofilters, and a portion of the screening berm that are currently located within the Southern Expansion footprint. A significantly larger area of wooded land would need to be cleared for graded for relocating these site features in comparison to the Selected Option. Clearing of the land will impact the existing habitat by removing it entirely. A review of threatened or endangered species and designated critical habitats was not completed for the surrounding areas and would need to be completed prior to any development.

Extending the leachate cleanout lines from the existing EPL into the Southern Expansion footprint would require removing the southern berm, removing and replacing the liner, removing final cover areas, relocating leachate and gas conveyance piping and waste placed along the southern berm. Exposing and excavating waste will release untreated landfill gas and therefore, increase greenhouse gas emissions. There is a greater risk for leachate spills during waste relocation while constructing leachate cleanout line connections and when relocating the leachate force main. Removing and replacing the liner along the southern berm also increases environmental risk by temporarily removing the barrier between the waste and the subsurface.

4.4.3 Economic Assessment

Although Alternative 4 provides adequate capacity (8.95 million cubic yards) to justify the capital investment for EPL, the relocation of the existing sedimentation basins, biofilters, and screening berm would increase this cost. An extensive storm water management system would be required to replace the functions of the impacted sedimentation basins and biofilters, increasing design and implementation costs. The removal of a portion of the screening berm would result in a reassessment of the overall grade of the berm to address storm water management. Regrading activities would be required in order to prevent slope stability issues and minimize erosion control impacts, increasing costs for design, planning, and reconstruction.

4.4.4 Logistical Assessment

Logistically, Alternative 4 can utilize the existing landfill entrance, existing office, existing maintenance facility, and the existing truck scale. However, a significant amount of existing infrastructure would require reconfiguration and/or relocation.

The footprint of the Southern Expansion would require a stockpile and a large portion of the screening berm to be relocated. The existing landfill gas collection and conveyance system would also require relocation and reconfiguration. Furthermore, three existing sedimentation basins and associated biofilters that cover nearly three acres of the Southern Expansion footprint would be required to be relocated on site and the subsequent surface water drainage system reconfigured. Approximately 121,500 cubic yards of material from the existing screening berm would need to be relocated as well.

4.4.5 Design, Construction, Operating, and Long-Term Care Assessment

Alternative 4 presents a landfill area mostly rectangular in shape. Technically, this landfill configuration allows it to be constructed within current standards of practice and typical construction quality assurance. All aspects of this expansion allow liners, leachate collection, final cover, gas collection, storm water, and other aspects to conform to current regulations and standards of practice. Excavation to subgrade prior to liner installation will produce adequate amounts of soil for use in liners, caps, perimeter berms, and cover soils.

Extending the leachate cleanout lines would require the entire southern berm of the existing landfill to be removed which includes removing the liner and excavating waste previously placed along the southern berm. This would add significant construction challenges when implementing mitigation measures to reduce potential environmental impacts discussed in Section 4.4.2. Relocating the existing sedimentation basins and biofilters and removing a large portion of the existing screening berm would require reconfiguring the existing storm water drainage system around the existing EPL, which would add significant construction challenges to avoid uncontrolled runoff and slope stability issues associated with the berm. This system would also be designed to replace and improve the flood and storm water attenuation, water quality, and wildlife habitat functions presently provided by the wetlands, navigable waterway, and unnamed intermittent stream to be impacted by Alternative 4.

4.4.6 Conclusion

Considering these environmental, economic, logistical, and technical assessments Tetra Tech finds that Alternative 4 does not meet the project goals. While it does provide a technically sound design and provides sufficient waste disposal capacity to justify the development cost, it increases the environmental impacts by directly impacting a higher quality wetland area, a navigable waterway, and an unnamed intermittent stream; by removing a larger habitat area due to clearing of wooded areas to relocate existing site features; and by creating more logistical impacts than the Selected Option.

4.5 ALTERNATIVE 5 – NORTHWESTERN EXPANSION

4.5.1 Summary of Alternative

The Northwestern Expansion Footprint (Alternative 5) provides for 35.9 acres of contiguous lateral waste disposal area northwest of the existing landfill with an additional 23.7 acres of vertical expansion, equating to approximately 8.16 million cubic yards of design capacity. Figure 7 shows the Alternative 5 – Northwestern Expansion Footprint. The footprint is constrained to the north by wetlands, to the east by the existing EPL landfill, and to the south by wetlands and a navigable manmade agricultural drainageway (S1). The footprint is constrained to the west by wetlands, additional navigable portions of S1, and code restrictions of NR 504.06(6)(b) which limit the length of leachate collection lines from the access point at one end to the toe of the opposite slope to 2,000 linear feet. Furthermore, the leachate riser, access vault, and collection sump are located in the northwest corner of Phase 7 North; the construction of Alternative 5 would make these design features inaccessible and would need to be reconfigured to avoid code violations.

The Northwestern Expansion area is currently occupied by Sedimentation Basin No. 1, a biofilter, and undeveloped and wooded land including wetlands. For Alternative 5 to be feasible, the sedimentation basin and biofilter would need to be relocated to a different area of the property. The environmental, economic, logistical, and technical impacts of Alternative 5 are described in more detail below.

4.5.2 Environmental Assessment

Development of Alternative 5 would directly impact approximately 19.5 acres of generally higher quality wetlands and approximately 601 feet of a navigable manmade agricultural drainageway S1, as identified on Figures 2 and 6. It should be noted that approximately 0.21 acres of wetland W2, within the Alternative 5 - Northwestern Expansion footprint and adjacent to the currently permitted Phase 7 South-West, will have already been impacted during construction of the currently permitted EPL. Additional discussion regarding the wetland impacts incurred as part of the construction of the currently permitted EPL is provided in Section 4.5.

The majority of the wetland would be impacted in order to accommodate this alternative, which is a significantly larger wetland area than the wetlands directly impacted by the Selected Option (16.4 acres). Other wetlands could potentially be impacted by this alternative due to the filling of the wetland and navigable ditch, as well as the relocation of other site features such as the sedimentation basin and biofilter that are currently located within the

Northwestern Expansion footprint. A significantly larger area of wooded land would need to be cleared for grading in comparison to the Selected Option. Clearing of the land would impact the existing habitat by removing it entirely. Furthermore, Alternative 5 would result in the development of land closer to the recently developed mitigation bank which may impact the fauna in this area. A review of threatened or endangered species and designated critical habitats was not completed for the surrounding areas and would need to be completed prior to any development.

Extending the leachate cleanout lines from the existing EPL into the Northwestern Expansion footprint would require removing the western berm along Phases 1, 2, and 3 and removing the northern berms along Phase 7 South-West and portions of Phase 7 North, removing final cover areas, removing and replacing the liner, reconfiguring the leachate cleanout riser, access vault, and collection sump, and relocating waste previously placed along the western berm. Exposing and excavating waste will release untreated landfill gas and therefore increase greenhouse gas emissions. There is a greater risk for leachate spills during waste relocation while constructing leachate cleanout line connections and when relocating the leachate force main. Removing and replacing the liner along the western berm also increases environmental risk by temporarily removing the barrier between the waste and the subsurface. Furthermore, joining older liner material that had waste and leachate over it with newer liner material is not considered as robust of a connection as when fusing like clean material.

4.5.3 Economic Assessment

Although Alternative 5 provides adequate capacity (8.16 million cubic yards) to justify the capital investment for EPL, the relocation of the sedimentation basin and biofilter only increases this cost. Reconfiguring the leachate riser, access vault, and collection sump to meet code requirements will add costs and may result in additional correspondence with the WDNR if a variance is required. An extensive storm water management system would be required to replace the functions of the impacted sedimentation basin and biofilter, increasing design and implementation costs. Impacts to the navigable drainageway would also require correspondence with the WDNR and USACE to gain the appropriate permits and ensure that requirements of Wis. Stat. ch. 30 are satisfied.

4.5.4 Logistical Assessment

Logistically, Alternative 5 can utilize the existing landfill entrance, existing office, existing maintenance facility, and the existing truck scale. However, a significant amount of existing infrastructure would require reconfiguration and/or relocation.

The footprint of the Northwestern Expansion would require the existing landfill gas collection and conveyance system and the leachate riser, access vault, and collection sump to be relocated and reconfigured. The existing sedimentation basin and biofilter that covers nearly four acres of the Northwestern Expansion footprint would be required to be relocated on site and the subsequent surface water drainage system reconfigured.

4.5.5 Design, Construction, Operating, and Long-Term Care Assessment

Alternative 5 presents a landfill area mostly rectangular in shape. Technically, this landfill configuration allows it to be constructed within current standards of practice and typical construction quality assurance. This expansion allows liners, final cover, gas collection, storm water, and other aspects to conform to current regulations and standards of practice. Excavation to subgrade prior to liner installation will produce adequate amounts of soil for use in liners, caps, perimeter berms, and cover soils.

Extending the leachate cleanout lines would require the entire western berm of the existing landfill (Phases 1, 2, and 3), the entire northern berm along Phase 7 South-West, and portions of the northern berm of Phase 7 North to be removed, which includes removing the liner and excavating waste previously placed along the western berm, and reconfiguring the leachate riser, access vault, and collection sump to meet code requirements. This would add significant construction challenges when implementing mitigation measures to reduce potential environmental impacts discussed in Section 4.5.2. Relocating the existing sedimentation basin and biofilter would

require reconfiguring the existing storm water drainage system around the existing EPL which would add significant construction challenges to avoid uncontrolled runoff.

4.5.6 Conclusion

Considering these environmental, economic, logistical, and technical assessments Tetra Tech finds that Alternative 5 does not meet the project goals. While it provides sufficient waste disposal capacity to justify the development cost, it does not provide a technically sound design, increases the environmental impacts by directly impacting a larger wetland area and removing a larger habitat area due to clearing of wooded areas, and creates more logistical impacts than the Selected Option.

4.6 ALTERNATIVE 6 – NO ACTION

4.6.1 Summary of Alternative

Alternative 6 assumes that the proposed landfill expansion would not be developed. The currently permitted EPL (Phases 1-8) would be constructed to its entirety with no further expansions. However, even though no expansions would be constructed, there will still be direct wetland impacts as a result of constructing the currently permitted EPL. This is due to the waste limits being approved in 2011 and the wetland delineation being revised in 2015 in areas where future permitted phases have not yet been constructed.

No action would not allow the project's basic goals to be fulfilled and would result in a number of significant negative consequences. The waste disposal needs analysis indicates a continued need for competitive waste disposal in the service area. If the EPL is not expanded, this need for additional disposal capacity within the EPL service area will result in the expansion of a different landfill or development of a greenfield landfill, as discussed in Section 4.7.

4.6.2 Needs Assessment

The projected service area of the proposed expansion will be similar to the existing service area of the EPL which includes part or all of Jefferson, Dodge, Kenosha, Milwaukee, Racine, Rock, Walworth, Washington, Waukesha and Lake (IL) Counties. Nine licensed MSW landfills not including EPL have been identified as facilities that accept MSW from within the projected service area for the proposed expansion, as shown on Figure 11. These landfills include:

- Glacier Ridge in Dodge County
- Zion Landfill in Lake County (Illinois)
- Mallard Ridge RDF in Walworth County
- City of Janesville in Rock County
- Republic Kestrel Hawk RDF in Racine County
- WMWI Deer Track Park in Jefferson County
- WMWI Pheasant Run RDF in Kenosha County
- WMWI Orchard Ridge RDF in Waukesha County
- WMWI Metro RDF in Milwaukee County

Current MSW disposal tonnage and estimated remaining site capacity data for these landfills was obtained from the 2022 and earlier WDNR Landfill Tonnage Reports. Approximately 670,000 cubic yards of waste are disposed in the EPL annually, based on the average historical waste acceptance rates from 2012 to 2021. The ten-year average waste disposal rate at EPL is considered more indicative of what the disposal rate will be in the future due to recent downturns in waste disposal rates related to the covid pandemic and acquisitions within the waste industry. The available disposal capacity of the existing permitted EPL, as of January 1, 2024, is approximately

5.9 million cubic yards. EPL's projected filling rate is expected to increase at the same rate as the calculated population growth of the service area, which is 0.18 percent annually. The 0.18 percent is an overall average increase and accounts for annual fluctuations due to economic factors, closures or expansions of surrounding facilities, population growth, or even debris from severe weather events.

4.6.3 Environmental Assessment

No action would avoid additional impacts to wetlands, agricultural ditches, and habitat within the EPL property. However, the currently permitted waste limits were created based on the 2009 wetland delineation and were approved in 2011. As discussed in Section 2.6, the 2015 wetland delineation revised these wetland boundaries such that the currently permitted waste limits and necessary perimeter berm and anticipated limits of constructions will now directly impact approximately 1.27 acres of wetland (W1, W2, W3, W4, W7 and W12) and the manmade non-navigable surface water pond P6 which is approximately 0.64 acres in size.

If an expansion of another landfill is performed instead, it is unknown whether wetland impacts would be less or avoided entirely since such siting will have to compete with agricultural or commercial development in a suitable upland parcel. Additionally, longer haul routes to another landfill outside the service area (e.g., Glacier Ridge Landfill or Zion Landfill) would generate increased greenhouse gas emissions when compared to current haul routes within the service area. An evaluation of a greenfield landfill is discussed in Section 4.7.

4.6.4 Economic Assessment

No action would result in closure of the EPL once waste capacity is reached. The closure of EPL would have both direct and indirect adverse economic impacts to EPL and the service area. Direct impacts would include loss of host fees to the host communities and towns, loss of wages to EPL employees who all live in southeastern Wisconsin, and the loss of local purchases for services and supplies. The indirect impacts are higher waste disposal fees due to decreased competition in the area, higher costs for trucks hauling longer distances to other landfills, and greater costs associated with development of a greenfield landfill.

4.6.5 Logistical Assessment

Assuming waste disposal rates at EPL continue to increase similarly to the rates experienced from 2018 through 2022, the currently permitted EPL (Phases 1-8) will reach disposal capacity by the year 2033 with the majority of disposal activity ending in 2032. Logistically, the No Action alternative may require a greenfield landfill to be developed in order to accommodate waste disposal rates of the service area. An evaluation of a greenfield landfill is discussed in Section 4.7.

4.6.6 Design, Construction, Operating, and Long-Term Care Assessment

Design, construction, operating, and long-term care assessment would not be required for the No Action alternative. An expansion of a landfill at another location may have an irregular configuration with angles that creates technical challenges to the current standards of practice and typical construction quality assurance. It is unknown if such an expansion would allow liners, leachate collection, final cover, gas collection, storm water, and other aspects to conform to current regulations and standards of practice. It is also unknown if an expansion at a different landfill would achieve a soil balance that would produce adequate amounts of soil for use in liners, caps, perimeter berms, and cover soils.

4.6.7 Conclusion

The No Action alternative would not achieve the project goals. It would have detrimental economic effects and may not avoid wetland disturbance elsewhere when a different landfill is expanded or developed to address the waste disposal needs of the service area. As such, Alternative 6 is not a practicable alternative as defined in NR 103.07(2).

4.7 ALTERNATIVE 7 – GREENFIELD LANDFILL

Tetra Tech assessed the potential for a new, undeveloped “greenfield” landfill as another alternative to the proposed Western Expansion. A greenfield landfill would require siting of approximately 150 acres of contiguous land to accommodate the new waste disposal area, stormwater, gas, and leachate management systems, and associated access routes and buildings. The search area was limited to Waukesha County, Wisconsin in order to provide a competitive alternative for waste disposal within the service area.

Locational criteria were first used to create setbacks from navigable water bodies, floodplains, and roads as specified in NR 504.04(3)(a), (b), (c), and (d). The areas located outside of these setbacks were then assessed to determine if enough contiguous land space was available for the development of the greenfield landfill. Although a handful of locations were identified, due to the high population density of the County there are numerous wells surrounding the locations and therefore would require exemptions from NR 504.04(3)(f) which states that landfills may not be developed within 1,200 feet of any public or private water supply well.

Furthermore, new landfills are not easily sited, and the general public interest is not served by facilitating the development of a new, undeveloped “greenfield” landfill when an existing, compliant landfill is available for expansion. A greenfield landfill would require a significantly larger footprint as opposed to the proposed Western Expansion (29.3 acres), as this allows for the use of existing landfill infrastructure and vertical expansion in addition to lateral expansion. Siting of a new landfill outside of the City of Muskego would require compliance with new municipal zoning, planning, and other applicable codes that may not allow the development of a landfill. Finally, the siting process for a new landfill takes a minimum of 10 years from start to finish and is therefore the least practicable in order to achieve the current need for waste disposal for the service area.

Environmentally, if a new greenfield landfill is developed elsewhere in this region, it is unknown whether or not impacts to wetlands, navigable waters, or other performance standards identified in NR 504.04(4) would be less or avoided entirely since such siting will have to compete with agricultural or commercial development in a suitable upland parcel. Additionally, longer haul routes to another landfill outside the service area (e.g. Glacier Ridge Landfill or Zion Landfill) would generate increased greenhouse gas emissions when compared to current haul routes within the service area.

The Greenfield Landfill alternative would not achieve the project goals. It would result in a longer timeline to achieve the project goals, potentially have more environmental impacts, and will likely be met with more disapproval from the general public when a new landfill is developed to address the waste disposal needs of the service area. As such, Alternative 7 is not a practicable alternative as defined in NR 103.07(2).

5.0 PRACTICABLE ALTERNATIVES CONCLUSIONS

This PAA evaluated the proposed western expansion (Selected Option) of the EPL and six alternatives, utilizing the criteria of NR 103. The proposed expansion and six alternatives evaluated are as follows:

- Alternative No. 1 – Proposed Western Expansion (Figure 3)
- Alternative No. 2 – Proposed Western Expansion with Current POO buildout (Figure 4 & 4a)
- Alternative No. 3 – Northern Expansion (Figure 5)
- Alternative No. 4 – Southern Expansion (Figure 6)
- Alternative No. 5 – Northwestern Expansion (Figure 7)
- Alternative No. 6 – No Expansion (Figure 8)
- Alternative No. 7 – Greenfield Landfill

Each of these options is further described and their results more fully discussed in Sections 3 and 4 of this report. An evaluation of the proposed expansion and each of the alternatives has been completed for several impact

criteria and a practicability rating, or relative ranking, assigned for each criterion. A summary of the evaluation of the proposed expansion and each of the alternatives is included in Table 1. Considering the environmental, economic, logistical, and technical assessments, Tetra Tech has determined that the proposed Western Expansion (Alternative 1) meets the project goals and is the most practicable alternative available to for continued environmentally sound landfill development at EPL. Alternatives 2, 3, 4, 5, 6, and 7 do not meet the project goals.

6.0 ANALYSIS OF SELECTED OPTION IMPACTS ON WETLANDS

6.1 IMPACT TO FUNCTIONAL VALUE OF WETLANDS

The soil, hydrology, and vegetation associated with the wetlands proposed to be filled and other surrounding wetlands were investigated by Stantec in 2014 to evaluate characteristics and environmental value. Wetlands were grouped based on proximity to each other and type; a total of eight WDNR Wetland Rapid Assessment Methodology evaluations were completed to evaluate the wetlands delineated during the 2014 wetland delineation. Wetland W12 was not included in the Wetland Rapid Assessment Methodology evaluations. W12 was delineated during a 2015 on-site boundary confirmation with the WDNR and USACE that occurred after the evaluations were complete. W12 is a small, isolated, manmade wetland (approximately 0.07 acres in size) and was identified as a wet meadow community type. Due to the small size and location of W12, the functional values of this wetland are assumed to be low in quality, similar to W3, W4, and/or W5/6.

Wetland functional values are described in the 2015 Stantec Wetland Delineation Report. Although all wetlands have some value, the wetlands proposed to be disturbed have been identified as having no or low fishery habitat value and no shoreline protection value. They have also been identified as having predominately low to medium floristic integrity, wildlife habitat value, flood and storm water storage, and water quality protection value; low groundwater value; and low aesthetics, recreational, and educational value. Note that W2A was identified as potentially having high capacity to provide water quality protection for the basin area of approximately 6 to 8 acres that is a tributary to S1, a navigable manmade agricultural drainageway, through W2A. Impacts to wetland W2A were avoided in the design of the selected alternative.

The 2015 wetland project was re-delineated by Tetra Tech in September of 2021 resulting in no changes to the wetland boundaries established by Stantec in 2015. After the boundaries were confirmed by Tetra Tech and a Wetland Delineation Addendum was submitted to the WDNR on November 24, 2021, Concurrence of the wetland boundaries from the WDNR was received on January 14, 2022.

6.2 WETLAND PROTECTION CRITERIA (PER NR 103.03(2))

A total of approximately 16.08 acres of wetlands and approximately 1060 feet of a navigable manmade agricultural drainageway will be directly impacted by the remaining permitted EPL and the proposed Western Expansion. This includes approximately 1.27 acres of wetlands that will be directly impacted by the currently permitted EPL during construction of future Phases 7 and 8 and in addition, approximately 14.81 acres of wetlands and the 1060 feet of a navigable waterway for construction of the proposed expansion. Wetlands impacted as part of the expansion will be offset by obtaining credits from a wetland mitigation bank. An approximately 71-acre wetland mitigation bank has been developed northwest of the existing EPL boundaries, on EPL-owned land, as discussed further in Section 7.2. The location of the mitigation bank is depicted in Figures 2, 9 and 10. EPL will apply for a Chapter 30 permit through the WDNR to realign the course of the manmade agricultural drainageway (S1) by constructing a meandering stream along the west side of the proposed expansion to mimic historical flow patterns as closely as possible, and to transport water collected in Sedimentation Basin No. 9 to upstream areas of S1.

Controlled filling of the landfill, a liner, leachate and gas collection systems, and good housekeeping and operational practices will minimize negative impacts to the functional values of the wetlands located closest to the proposed expansion, other wetlands on the property, and other areas of the navigable drainageway not directly impacted by the proposed expansion. The functional values of those remaining wetlands not directly or indirectly impacted by the proposed landfill expansion will be protected in accordance with applicable requirements of NR 103.03(2).

6.3 POTENTIAL SECONDARY IMPACTS

The potential secondary impacts to the proposed Western Expansion are the indirect impacts that the project may have as a result of the disturbance and filling of wetlands within the expansion footprint and the realignment of the navigable manmade agricultural drainageway S1. The proposed expansion is bound to the east by existing landfill operations, to the south by Union Church Drive and residences, and to the west, northwest, and north by agricultural land and undeveloped wooded, uplands, and wetlands. Although the expansion will reduce some of the habitat on the property, it will minimize impacts by allowing the large undeveloped area to the west and northwest (which includes the established wetland mitigation bank) to remain suitable for wildlife habitat. Secondary impacts to the remaining wetlands due to changes in hydrology, in other words storm water quality and quantity, will be minimized with a storm water management system that will store and treat runoff from the proposed expansion. Storm water management is further described below.

The stream realignment design will mimic the historical flow path as well as the current characteristics of the existing drainageway as closely as possible in order to reduce secondary impacts to both upstream and downstream properties and habitat including stream flow, erosion, and flooding. Consequently, the proposed expansion is not anticipated to result in significant adverse secondary impacts to the remaining wetlands or habitat on the property.

6.3.1 Storm Water

As a permitted Tier 2 industrial facility under NR 216, Wis. Adm. Code, EPL has a storm water pollution prevention plan that identifies potential sources of storm water and non-storm water contamination to the storm water drainage system. Best management practices (BMPs) are implemented to reduce potential sources of contamination to storm water runoff and reduce pollutants to the storm water system. Consequently, runoff from the proposed EPL expansion will be routed to newly constructed sedimentation basins (8 and 9) located west and southwest of the proposed expansion, providing improved water quality prior to discharging to wetlands. Inspections of the EPL will occur frequently to verify BMPs are functioning and runoff is treated prior to any potential discharge to the remaining wetlands on the property. Thus, the overall pre-development versus post-development surface water balance for surrounding wetlands would be similar, and no measurable impacts to surrounding wetland areas and other agricultural drainageways are anticipated.

Specific storm water management plans will be developed as part of the Plan of Operation submittal to the WDNR should a favorable WDNR determination be made on the Feasibility Report for the proposed expansion.

6.3.2 Construction Impacts

Construction activities could result in temporary secondary impacts to the remaining wetlands and habitat on the property as a result of construction noise and possibly storm water runoff. The Plan of Operation and Storm Water Pollution Prevention Plan (SWPPP) will include storm water BMPs that are designed to meet WDNR technical standards. Adherence to the plan and construction of the storm water BMPs will minimize the amount of sediment in storm water entering the wetlands. Secondary impacts from nuisance conditions such as dust and noise will be minimized in accordance with generally accepted standard operating procedures. Dust will be controlled with a water truck or other dust suppressant as needed. Noise will be controlled by keeping noise-reducing equipment in working condition.

6.3.3 Other Environmental Consequences

Development of the proposed Western Expansion will provide a positive net environmental benefit. While wetlands are proposed to be removed, the wetland mitigation bank on site exceeds the quantity and quality of wetlands being removed. The mitigation bank on EPL property offers a higher quality habitat in close proximity to the impacted wetlands. Furthermore, the proposed expansion will give EPL the capacity for a total of 8 years of additional site life.

6.4 WETLAND AREAS OF SPECIAL NATURAL RESOURCE INTERESTS (PER NR 103.04)

The wetlands that would be impacted by the selected option are not located in or adjacent to an Area of Special Natural Resource Interest under NR 103.04, Wis. Adm. Code and are not hydrologically connected to an Area of Special Natural Resource Interest. However, one manmade agricultural drainageway (S1/D2 and associated drainageway D3) is located within the proposed western expansion footprint, and one manmade agricultural drainageway (S2) is located approximately 760 feet west of the footprint (Figure 3). Both drainageways are unnamed tributaries to Big Muskego Lake and the Fox River. S1/D2 is a first order waterway (WBIC 5038269) and is associated with wetland W2 and W2A. S2 is a second order waterway (WBIC 5038471) that is contiguous with wetland W8. S1/D2 and S2 generally flow northerly and connect outside the Project Area to the northwest adjacent to the wetland mitigation bank. The WDNR determined a portion of S1/D2 to be navigable during a September 23, 2014 site visit.

Regarding other sensitive lands or species, an endangered resources review request determined that impacts to any state or federally designated threatened or endangered species would be minimal. The site is not located within or adjacent to any wildlife refuges, wildlife management areas, or designated wilderness area.

6.5 CONCLUSION

Portions of nine wetlands (W1, W2, W3, W4, W7 and W12), a portion of a navigable manmade agricultural drainageway (S1/D2), will be impacted by constructing the currently permitted EPL and the proposed landfill expansion. The wetlands will be filled. The wetlands are not wetlands of Special Natural Resource Interests and generally provide low to medium floristic value and wildlife habitat due to past agricultural use and wetland size. These wetlands provide limited functional values in fish and aquatic life habitat based on the surrounding land use.

Despite the adverse impacts from filling 14.81 acres of wetlands and realignment of a navigable waterway, the proposed expansion will avoid impacts to generally higher quality wetlands of similar or greater size to the northwest and south, as well as impacts to other navigable waterways, and an unnamed intermittent stream in the Southern Expansion footprint. The proposed expansion will also have an overall smaller expansion footprint than these alternatives. The Northwestern Expansion footprint is also contiguous with the tracts of land that were enhanced and restored as part of the wetland mitigation bank to provide water quality, wildlife, and fisheries habitat. Although wetland impacts associated with the Northern Expansion are anticipated to be less than the proposed expansion, other environmental, design, and construction challenges exist due to the exhumation, relocation, and contamination associated with the closed FPD Landfill.

The direct impacts to wetlands attributed to the proposed project do not represent an irretrievable loss of resources and can be replaced through compensatory mitigation. A comprehensive storm water design, implementation and maintenance of appropriate erosion control measures, and sound operating procedures will minimize the potential for secondary and cumulative impacts to wetland functional values throughout the construction, operation, and long-term care periods of the proposed project.

7.0 PLANNED MITIGATION OF WETLAND IMPACTS

7.1 MINIMIZE EFFECTS OF LANDFILL EXPANSION ON ADJACENT WETLANDS

The project will minimize the negative effects on the remaining wetlands on the EPL property by implementing proper storm water and erosion control plans for the project and stabilizing disturbed areas near or adjacent to the remaining wetlands on the property or areas that drain directly to the remaining wetlands on the property. Construction of temporary erosion and sediment control methods (such as silt fence, ditch checks, storm water ponds) will control the runoff into the wetlands and avoid sedimentation. At the conclusion of construction, all disturbed areas will be seeded, mulched and/or covered with erosion control blankets. Disturbed areas within 50 feet of any of the other wetlands on the property will be seeded and stabilized with erosion control mats. No mulching will occur within 50 feet of a wetland.

7.2 MITIGATION OF WETLAND IMPACTS

Wetlands impacted as part of the expansion will be offset by obtaining credits from a wetland mitigation bank. An approximately 71-acre wetland mitigation bank has been developed northwest of the existing EPL boundaries, on EPL-owned land. The mitigation bank was developed in accordance with the 2003 Wetland Mitigation Compensation Site Plan (CSP) which was approved by the Interagency Review Team (IRT) on January 26, 2004. The approved CSP included pre-construction site descriptions, site design, project goals, objectives, performance standards, and a monitoring and maintenance plan. Restoration and enhancement of the mitigation bank occurred from September 2004 through November 2013. Monitoring of the mitigation bank to document site conditions and to determine whether performance standards goals were met has occurred from 2009 through 2018. Supplemental information (including an updated CSP) was requested by the IRT prior to issuing bank credits; the requested information was submitted. The release of 41.90 wetland bank credits was approved on February 14, 2023. The location of the mitigation bank is depicted in Figures 2,9 and 10. The mitigation summary will be submitted as part of the Wetland and Waterways Individual permit.

In order to minimize and mitigate impacts to the navigable portion of S1, EPL will apply for an individual permit to realign the course of the manmade agricultural drainageway by constructing a stream along the west side of the proposed expansion to mimic historical flow patterns as closely as possible, and to transport water collected in Sedimentation Basin No. 9 to upstream areas of S1.

REFERENCES

- Cornerstone Environmental Group (Cornerstone), Memorandum of *Emerald Park Landfill West Expansion Delineation Confirmation*, May 18, 2015.
- Department of the Army Corps of Engineers (ACOE), Concurrence Letter for *Wetland Delineation Report for an approximately 62 acre project site located in the NE1/4 of the SW1/4 of Section 36, Township 5 North, Range 20 East, City of Muskego, Waukesha County*. June 22, 2015.
- Natural Resources Consulting, Inc. (NRC), *Meeting Minutes of Wetland Boundary Review / Navigability Review for Emerald Park Landfill*. November 12, 2007.
- Stantec Consulting Services, Inc. (Stantec), *Wetland & Waterway Delineation Report for Emerald Park Landfill Western Expansion*. December 10, 2014.
- Stantec, Memo of *Emerald Park Western Expansion Site 2014 Wetland Functional Assessments*. December 16, 2014.
- Tetra Tech, *Wetland Delineation Addendum Emerald Park Landfill - Proposed Western Expansion*. November 24, 2021.
- United States Department of the Interior Fish and Wildlife Service (USFWS), *List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project*. November 11, 2019.
- Wisconsin Department of Natural Resources (WDNR), *Approval Letter to use December 22, 2005 ISR for the Emerald Park Landfill Expansion*. June 6, 2011.
- WDNR, *Conditional Approval Letter for Southwestern Expansion Plan of Operation, Veolia ES Emerald Park Landfill*. June 9, 2011.
- WDNR, *Completeness Determination Letter for the Advanced Disposal Emerald Park Landfill Proposed Western Expansion Feasibility Report*. April 1, 2014.
- WDNR, *Response to Comments Received During Public Comment Period for the Advanced Disposal Emerald Park Landfill Proposed Western Horizontal & Vertical Expansion*. August 1, 2014.
- WDNR, Correspondence/Memorandum of *2014 Navigability Determination for EPL Expansion Proposal*. September 23, 2014.
- WDNR, Concurrence Letter for *Wetland Delineation Report for an approximately 62 acre project site located in the NE1/4 of the SW1/4 of Section 36, Township 5 North, Range 20 East, City of Muskego, Waukesha County*. June 8, 2015.
- WDNR, *Endangered Resources Review (ERR Log # 19-812) for Proposed Western Horizontal Expansion Project*. November 26, 2019.
- WDNR, Concurrence Letter for *Wetland Delineation Report titled "Wetland Delineation Addendum – Emerald Park Landfill – Proposed Western Expansion" for an approximately 62 acre project site located in the NE1/4 of the SW1/4 of Section 36, Township 5 North, Range 20 East, City of Muskego, Waukesha County*. January 14, 2022.

TABLES

Emerald Park Landfill
Long Term Solid Waste Planning - Practicable Alternatives Analysis
January 3, 2022

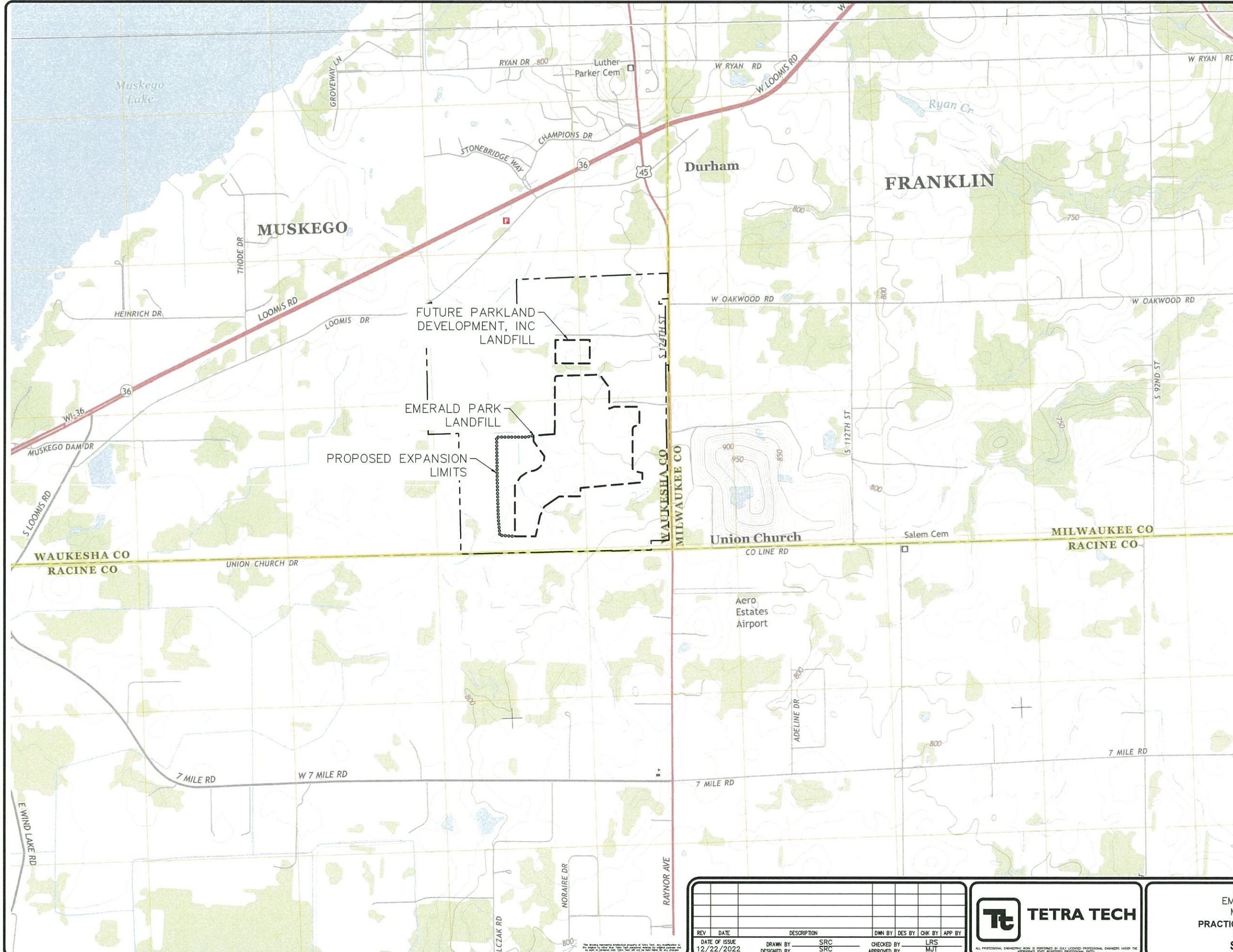
Parameter	ALTERNATIVES									
	Greenfield Landfill EPL Closed	NO ACTION OR LONG TERM PLANNING/DEVELOPMENT	LONG TERM PLANNING							
			Proposed Western Exp.	Proposed W. Exp. w/ POO	North Expansion	South Expansion	Northwestern Expansion			
Wetland Impact (acres/quality)	Unknown with greenfield landfill development or other existing landfill expansions. 3	Wetland impacts determined with each expansion & avoided for the short term only; no long term plan to minimize wetland impacts. 3	16.4 acres/low to medium functional value wetlands impacted. 2	16.4 acres/low to medium functional value wetlands impacted. 2	2.8 acres of medium to high functional value wetlands impacted. 4	15.9 Acres of high functional value wetland impacted. 1	19.5 Acres of high functional value wetlands impacted. 1			
Wetland Mitigation Potential	Unknown with greenfield landfill development or other existing landfill expansions. 3	no impact, no wetland banking. 3	Wetland Mitigation Bank is set up to permanently replace impacted acreage with higher quality wetlands. 5	Wetland Mitigation Bank is set up to permanently replace impacted acreage with higher quality wetlands. 5	Wetland Mitigation Bank is set up to permanently replace impacted acreage with higher quality wetlands. 5	Wetland Mitigation Bank is set up to permanently replace impacted acreage, however more credits will be required to replace high functional value wetlands. 2	Wetland Mitigation Bank is set up to permanently replace impacted acreage, however more credits will be required to replace high functional value wetlands. 1			
Waste Disposal Capacity (acres/volume/years)	80 to 200 acres of greenfield 25 year minimum 2	0 acres / o cubic yards/ 0 years; Other landfill expansions or greenfield sites needed for the disposal capacity. 1	7.8 million cubic yards of disposal capacity added. 5	6.3 million cubic yards of disposal capacity added. 3	6.6 million cubic yards of disposal capacity added. 3	8.95 million cubic yards of disposal capacity added. 5	8.16 million cubic yards of disposal capacity added. 5			
Cost of Disposal Capacity	No cost to EPL, higher costs to economy for siting greenfield landfill capacity. 1	Difficult to control costs for land acquisition & construction without a long term plan. 2	Adjacent to existing landfill and phasing includes an overlay. No obstructions or design issues in the expansion area. 5	Less capacity than the selected option of the same footprint and more complex to construct and may not meet NR 500 codes for leachate management. Technical and operational impracticities. 1	Adjacent to existing landfill and phasing includes an overlay on a closed portion of the landfill, less capacity then selected option. Requires relocation of closed future parklands landfill, stockpile relocation and compost area relocation which further reduces overall disposal capacity. 1	Adjacent to existing landfill and phasing includes an overlay on a closed portion of the landfill, more capacity then selected option, requires three acres of stormwater basin and biofilter relocation, overall stormwater redesign and reconfiguration of gas collection system. 3	Adjacent to existing landfill and phasing includes an overlay on a closed portion of the landfill, more capacity then selected option, requires stormwater basin and biofilter relocation, overall stormwater redesign and reconfiguration of leachate collection system. 3			
Permitting - DNR	Difficult - greenfield site likely very expensive and time consuming to permit. 1	Difficult - wetland & stream impacts. 3	Wetland & stream impact permits nearly complete. 4	Wetland & stream impact permits nearly complete, but may expire due to delays in construction and permitting. 2	Difficult - wetland & stream impacts. Waste relocation will require more permitting over an extensive period of time. 1	Difficult - wetland & stream impacts, extensive time needed to restart permit process. 2	Difficult - wetland & stream impacts. Collection sump may require WDNR variance. 1			
Permitting - Local	Difficult - greenfield site likely very expensive and time consuming to permit. 1	Difficult to obtain permits & zoning changes without a long term plan. 3	Parcel owned by EPL; zoning in place; favored by local siting committee. 5	Parcel owned by EPL; zoning in place; favored by local siting committee. 5	Parcel owned by EPL; zoning in place; favored by local siting committee. 5	Parcel owned by EPL; zoning in place; favored by local siting committee. 5	Parcel owned by EPL; zoning in place; favored by local siting committee. 5			
Social Impacts	New landfill development will cause new social concerns and impacts. 1	Neighbors and affected communities have a greater sense of uncertainty without a long term plan. 2	Overlays and is adjacent to current landfill active area; this option does not require removing or working around any perimeter berms and is the logical next area for expansion. Easiest to construct and results on the lowest carbon footprint. 5	Overlays and is adjacent to current landfill active area; this option would be constructed over a perimeter berm and involve working around a non rectangular shape. Harder and longer construction for less capacity, therefore higher carbon footprint. 1	Overlays and is adjacent to current landfill active area; this option would be constructed over a perimeter berm and involve waste relocation, stockpiles relocation and new compost facility. Very complicated construction, loss of compost facility and much higher carbon footprint. 1	Overlays and is adjacent to current landfill active area; this option would be constructed over a perimeter berm and involve waste relocation and destruction of high functional value wetlands. 3	Overlays and is adjacent to current landfill active area; this option would be constructed over a perimeter berm and involve waste relocation and destruction of high functional value wetlands. 3			
Economic Impacts	Short-term loss of landfill capacity results in higher disposal costs, loss of fees paid to host municipality & loss of jobs; new landfill development likely very expensive & will result in higher disposal fees. 1	Incremental expansions, unknown affect on disposal costs. 2	Contiguous expansion, lower construction & hauling costs keep waste disposal costs in control. 5	Contiguous expansion, low hauling costs, more expensive to construct; may increase waste disposal costs. 3	Contiguous expansion, low hauling costs, much more expensive to construct; may increase waste disposal costs. 3	Contiguous expansion, low hauling costs, more expensive to construct; may increase waste disposal costs. 3	Contiguous expansion, low hauling costs, more expensive to construct; may increase waste disposal costs. 3			
Carbon Footprint	Greenfield site development results in loss of vegetation & increased construction activity; New landfills are likely to be located further away from production centers which would have an adverse effect on transportation logistics. 1	Incremental expansions result in a disconnected facility, causing increased construction activity and adverse effects on transportation logistics. 2	Adjacent expansion; least amount of construction activity and no effect on transportation logistics. 5	Adjacent expansion; more construction activity than selected option and no effect on transportation logistics. 4	Adjacent expansion; much more construction activity than selected option, high potential for release of greenhouse gases during waste relocation and no effect on transportation logistics. 1	Adjacent expansion; more of construction activity than selected option and no effect on transportation logistics. Impacts more high quality wetlands lowering carbon sequestration in the area. 3	Adjacent expansion; more of construction activity than selected option and no effect on transportation logistics. Impacts more high quality wetlands lowering carbon sequestration in the area. 3			
Practicability / Score	Not Practicable 14	Not Practicable 21	Practicable 41	Not Practicable 26	Not Practicable 24	Not Practicable 27	Not Practicable 25			

= Practicability Rating (1 = Least Practicable/5 = Most Practicable)

"Practicable Alternatives" defined as: available and capable of being implemented after taking into consideration cost, available technology and logistics in light of overall project purposes (NR 103.07).

FIGURES

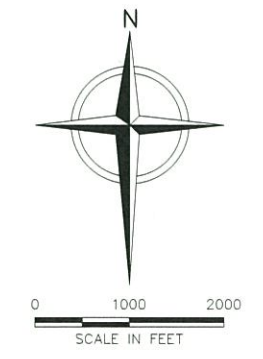
File: X:\PROJECTS\EMERALD PARK\4221384 - 2022\FACILITY RESPONSE_Plan Set\101-EP12384-S-SITE.dwg Layout: 01 User: abhus.cunningham Dec 19, 2022 - 3:56pm
 1" = 1/2" = 0"



LEGEND

	APPROXIMATE PROPERTY LINE
	APPROVED WASTE LIMITS
	PROPOSED EXPANSION LIMITS

NOTE:
 1. TOPOGRAPHIC BACKGROUND IS FROM USGS 7.5-MINUTE SERIES MAPS OF NORTH CAPE, WI (2013) AND HALES CORNERS (2013).



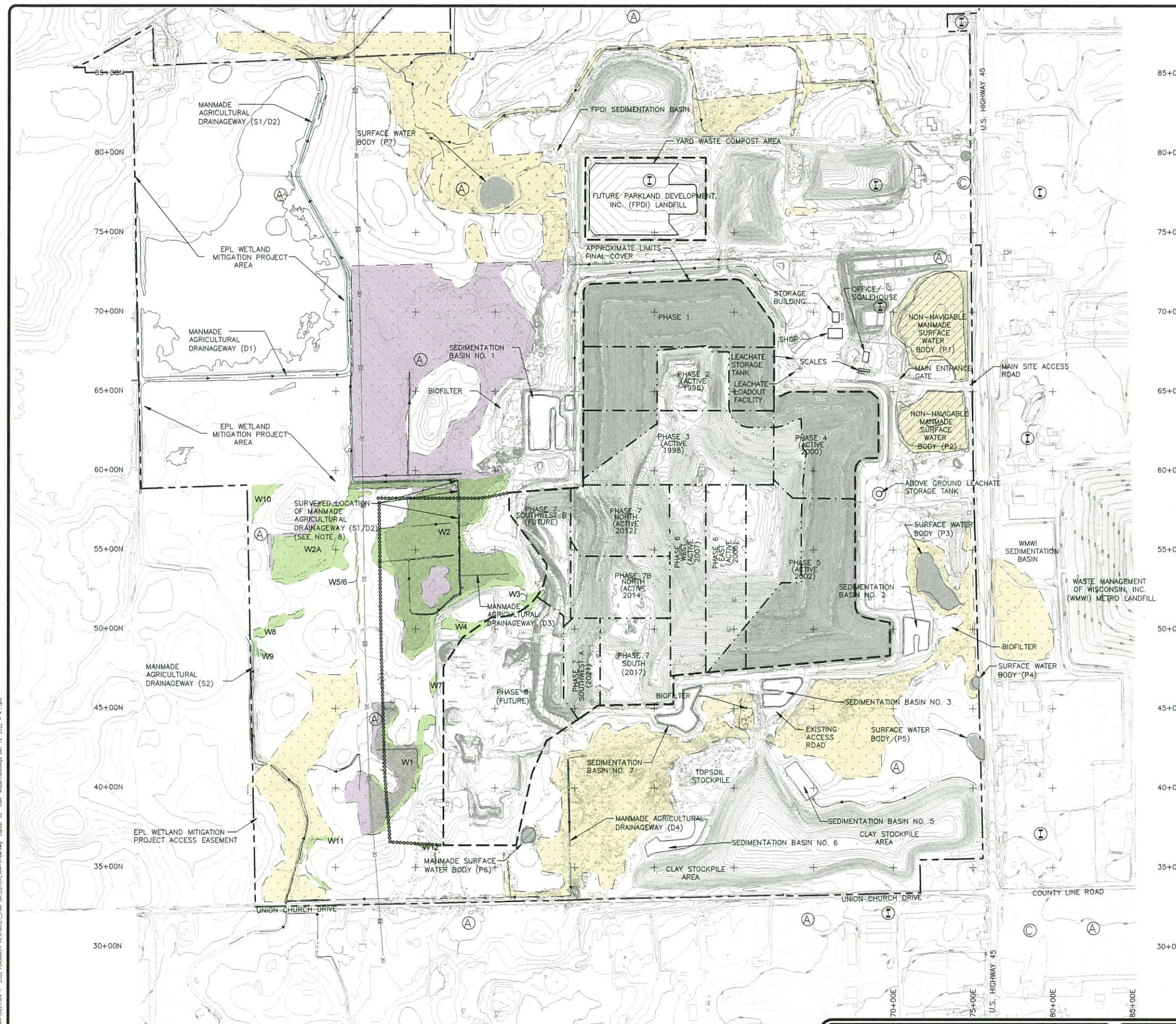
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	12/22/2022	DATE OF ISSUE				
		DRAWN BY: SRC				
		DESIGNED BY: SRC				
		CHECKED BY: LRS				
		APPROVED BY: MJT				



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
PRACTICAL ALTERNATIVES ANALYSIS
WESTERN EXPANSION
SITE VICINITY MAP

FIGURE NO.
01
 PROJECT NO.
 4221384

File: X:\PROJECTS\EMERALD PARK\2022\FEASIBILITY RESPONSE\1221304 - 2022 FEASIBILITY RESPONSE\1221304 - 2022 FEASIBILITY RESPONSE.dwg
 User: shawn.combs
 Date: 12/22/2022 4:11pm



LEGEND

- APPROXIMATE PROPERTY LINE
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- BUILDING
- 10' CONTOUR
- 2' CONTOUR
- TREES AND/OR BRUSH
- DELINEATED WETLAND (SEE NOTE 3)
- DELINEATED WETLAND 2009-10-22 (SEE NOTE 2)
- DELINEATED WETLAND 2015 (W1 - W12) (SEE NOTE 4)
- WETLAND ID PER 2015 DELINEATION REPORT
- MANMADE SURFACE WATER BODY
- SURFACE WATER BODY
- GRID INTERSECTION
- 2007 NAVIGABLE WATERWAY
- 2014 NAVIGABLE WATERWAY
- PERMITTED LIMITS OF WASTE
- PHASE DELINEATION LINE
- PROPOSED EXPANSION LIMITS
- MONITORING WELL LOCATION AND NUMBER
- PIEZOMETER LOCATION AND NUMBER
- STAFF GAUGE LOCATION AND NUMBER
- APPROXIMATE PRIVATE WELL LOCATION
- GAS MONITORING PROBE LOCATION AND NUMBER
- OVERHEAD ELECTRIC LINE WITH TOWER
- DRAINAGE DITCH AND FLOW DIRECTION
- APPROXIMATE LIMITS OF FINAL COVER

LAND USE LEGEND

- AGRICULTURE
- COMMERCIAL / SERVICE
- INDUSTRIAL

- ### NOTES:
1. LAND USE IS BASED ON INFORMATION FROM EMERALD PARK LANDFILL, SITE OBSERVATION AND LOCAL ZONING.
 2. WETLAND DELINEATIONS WITHIN EMERALD PARK LANDFILL PROPERTY BOUNDARIES WERE DETERMINED IN THE FIELD BY JOHNSON, JOHNSON & ROY/JNC, MADISON, WISCONSIN, AND IN 2009 BY NATURAL RESOURCES CONSULTING, INCORPORATED, WINDSOR, WISCONSIN.
 3. WETLAND DELINEATION TO THE NORTH, SOUTH, EAST, AND WEST OF EMERALD PARK LANDFILL PROPERTY BOUNDARIES IS BASED ON LIMITS DEFINED ON THE FOLLOWING WISCONSIN WETLANDS INVENTORY MAPS, PREPARED BY THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES BUREAU OF PLANNING-TOWNSHIP 5 NORTH, RANGE 21 EAST, MILWAUKEE COUNTY, WI, DATED JULY 1979 AND REVISED OCTOBER 1995-TOWNSHIP 5 NORTH, RANGE 20 EAST WALKESHA COUNTY, WI, DATED JULY 1979 AND REVISED MARCH 1986.
 4. WETLAND DELINEATIONS WITHIN THE PROPOSED WESTERN EXPANSION WERE PERFORMED BY STANTEC IN OCTOBER 2013, OCTOBER 2014, MARCH 2015, AND MAY 2015. THE MAY 2015 WETLAND BOUNDARIES WERE APPROVED BY THE WDNR AND ACOE IN JUNE 2015. CONFIRMED IN 2021 BY TETRA TECH.
 5. HORIZONTAL DATUM IS BASED ON THE WISCONSIN STATE PLANE COORDINATE SYSTEM. THE SITE GRID COORDINATE SYSTEM IS DERIVED FROM THE LAST FOUR DIGITS OF THE STATE PLANE COORDINATE N. SITE GRID + 310,000-N. STATE PLANE COORDINATE E. SITE GRID + 2,510,000-E. STATE PLANE COORDINATE.
 6. VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL, 1929 ADJUSTMENT. TOPOGRAPHIC CONTOUR INTERVAL IS TWO FEET.
 7. APPROXIMATE PROPERTY LINE IS BASED ON SURVEY DATA PROVIDED BY NORTH SHORE ENGINEERING, INC., MEQUON, WISCONSIN.
 8. DRAINAGEWAY 'D2' WAS SURVEYED BY EMERALD PARK LANDFILL FOLLOWING A SITE VISIT BY WDNR TO CONFIRM WETLAND BOUNDARIES ON NOVEMBER 12, 2007. A NAVIGABILITY DETERMINATION WAS MADE BY THE WDNR FOR THE SAME DRAINAGEWAY ON SEPTEMBER 23, 2014, WHICH IDENTIFIED ADDITIONAL AREAS OF NAVIGABILITY. THE DRAINAGEWAY WAS SUBSEQUENTLY RENAMED 'S1.'
 9. EXISTING CONTOURS ARE BASED ON SURVEYS PERFORMED ON APRIL 16, 2013 BY AYRES ASSOCIATES AND SEPTEMBER 29, 2022 BY TETRA TECH.



REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE: 12/22/2022
 DRAWN BY: SRC
 DESIGNED BY: SRC
 CHECKED BY: LRS
 APPROVED BY: MJT



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
PRACTICAL ALTERNATIVES ANALYSIS
 WESTERN EXPANSION
EXISTING CONDITIONS

FIGURE NO.
02
 PROJECT NO.
 4221384



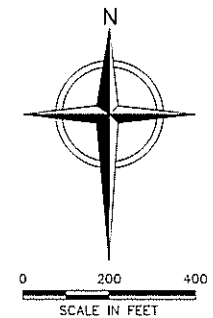
LEGEND

- APPROXIMATE PROPERTY LINE
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- BUILDING
- 10' CONTOUR
- 2' CONTOUR
- TREES AND/OR BRUSH
- DELINEATED WETLAND
- W2 WETLAND ID PER 2015 DELINEATION REPORT
- MANMADE SURFACE WATER BODY
- SURFACE WATER BODY
- GRID INTERSECTION
- PERMITTED LIMITS OF WASTE
- OVERHEAD ELECTRIC LINE
- DRAINAGE DITCH AND FLOW DIRECTION
- APPROXIMATE LIMITS OF FINAL COVER
- PROPOSED PERIMETER ROAD AND BERM
- PROPOSED LIMITS OF CONSTRUCTION
- PROPOSED FINAL WASTE 10' CONTOUR
- PROPOSED FINAL WASTE 2' CONTOUR
- PROPOSED EXPANSION LIMITS
- PROPOSED HORIZONTAL EXPANSION AREA
- PROPOSED VERTICAL EXPANSION AREA

WESTERN EXPANSION VOLUME SUMMARY

CUT (CY)	FILL (CY)	NET (CY)
0	7,790,000	7,790,000 (FILL)

- NOTES:**
- 1 WETLANDS ON THIS DRAWING ARE A COMBINATION OF 2015, 2009 AND EARLIER DELINEATIONS SEE FIGURE NO. 2 FOR ADDITIONAL WETLAND INFORMATION
 - 2 PROPOSED CONTOURS ARE TOP OF WASTE
 - 3 WASTE VOLUMES ARE APPROXIMATE AND SUBJECT TO CHANGE
 - 4 APPROXIMATELY 16.4 ACRES OF WETLANDS WILL BE DIRECTLY IMPACTED BY THE PROPOSED WESTERN EXPANSION, INCLUDING ALL OR PORTIONS OF W1, W2, W2A, W5/6 AND W8 APPROXIMATELY 1.3 ACRES OF WETLANDS WILL HAVE ALREADY BEEN DIRECTLY IMPACTED BY CONSTRUCTION OF THE CURRENTLY PERMITTED EPL AND LIMITS OF CONSTRUCTION, INCLUDING ALL OR PORTIONS OF W1, W2, W3, W4, W7 AND W12
 - 5 ADDITIONAL SURVEY AND SITE FEATURES INFORMATION PROVIDED ON FIGURE NO. 2



1" = 1/2" 0' 1" 2" 3" 4" 5" 6" 7" 8" 9" 10" 11" 12" 13" 14" 15" 16" 17" 18" 19" 20" 21" 22" 23" 24" 25" 26" 27" 28" 29" 30" 31" 32" 33" 34" 35" 36" 37" 38" 39" 40" 41" 42" 43" 44" 45" 46" 47" 48" 49" 50" 51" 52" 53" 54" 55" 56" 57" 58" 59" 60" 61" 62" 63" 64" 65" 66" 67" 68" 69" 70" 71" 72" 73" 74" 75" 76" 77" 78" 79" 80" 81" 82" 83" 84" 85" 86" 87" 88" 89" 90" 91" 92" 93" 94" 95" 96" 97" 98" 99" 100" 101" 102" 103" 104" 105" 106" 107" 108" 109" 110" 111" 112" 113" 114" 115" 116" 117" 118" 119" 120" 121" 122" 123" 124" 125" 126" 127" 128" 129" 130" 131" 132" 133" 134" 135" 136" 137" 138" 139" 140" 141" 142" 143" 144" 145" 146" 147" 148" 149" 150" 151" 152" 153" 154" 155" 156" 157" 158" 159" 160" 161" 162" 163" 164" 165" 166" 167" 168" 169" 170" 171" 172" 173" 174" 175" 176" 177" 178" 179" 180" 181" 182" 183" 184" 185" 186" 187" 188" 189" 190" 191" 192" 193" 194" 195" 196" 197" 198" 199" 200" 201" 202" 203" 204" 205" 206" 207" 208" 209" 210" 211" 212" 213" 214" 215" 216" 217" 218" 219" 220" 221" 222" 223" 224" 225" 226" 227" 228" 229" 230" 231" 232" 233" 234" 235" 236" 237" 238" 239" 240" 241" 242" 243" 244" 245" 246" 247" 248" 249" 250" 251" 252" 253" 254" 255" 256" 257" 258" 259" 260" 261" 262" 263" 264" 265" 266" 267" 268" 269" 270" 271" 272" 273" 274" 275" 276" 277" 278" 279" 280" 281" 282" 283" 284" 285" 286" 287" 288" 289" 290" 291" 292" 293" 294" 295" 296" 297" 298" 299" 300" 301" 302" 303" 304" 305" 306" 307" 308" 309" 310" 311" 312" 313" 314" 315" 316" 317" 318" 319" 320" 321" 322" 323" 324" 325" 326" 327" 328" 329" 330" 331" 332" 333" 334" 335" 336" 337" 338" 339" 340" 341" 342" 343" 344" 345" 346" 347" 348" 349" 350" 351" 352" 353" 354" 355" 356" 357" 358" 359" 360" 361" 362" 363" 364" 365" 366" 367" 368" 369" 370" 371" 372" 373" 374" 375" 376" 377" 378" 379" 380" 381" 382" 383" 384" 385" 386" 387" 388" 389" 390" 391" 392" 393" 394" 395" 396" 397" 398" 399" 400" 401" 402" 403" 404" 405" 406" 407" 408" 409" 410" 411" 412" 413" 414" 415" 416" 417" 418" 419" 420" 421" 422" 423" 424" 425" 426" 427" 428" 429" 430" 431" 432" 433" 434" 435" 436" 437" 438" 439" 440" 441" 442" 443" 444" 445" 446" 447" 448" 449" 450" 451" 452" 453" 454" 455" 456" 457" 458" 459" 460" 461" 462" 463" 464" 465" 466" 467" 468" 469" 470" 471" 472" 473" 474" 475" 476" 477" 478" 479" 480" 481" 482" 483" 484" 485" 486" 487" 488" 489" 490" 491" 492" 493" 494" 495" 496" 497" 498" 499" 500" 501" 502" 503" 504" 505" 506" 507" 508" 509" 510" 511" 512" 513" 514" 515" 516" 517" 518" 519" 520" 521" 522" 523" 524" 525" 526" 527" 528" 529" 530" 531" 532" 533" 534" 535" 536" 537" 538" 539" 540" 541" 542" 543" 544" 545" 546" 547" 548" 549" 550" 551" 552" 553" 554" 555" 556" 557" 558" 559" 560" 561" 562" 563" 564" 565" 566" 567" 568" 569" 570" 571" 572" 573" 574" 575" 576" 577" 578" 579" 580" 581" 582" 583" 584" 585" 586" 587" 588" 589" 590" 591" 592" 593" 594" 595" 596" 597" 598" 599" 600" 601" 602" 603" 604" 605" 606" 607" 608" 609" 610" 611" 612" 613" 614" 615" 616" 617" 618" 619" 620" 621" 622" 623" 624" 625" 626" 627" 628" 629" 630" 631" 632" 633" 634" 635" 636" 637" 638" 639" 640" 641" 642" 643" 644" 645" 646" 647" 648" 649" 650" 651" 652" 653" 654" 655" 656" 657" 658" 659" 660" 661" 662" 663" 664" 665" 666" 667" 668" 669" 670" 671" 672" 673" 674" 675" 676" 677" 678" 679" 680" 681" 682" 683" 684" 685" 686" 687" 688" 689" 690" 691" 692" 693" 694" 695" 696" 697" 698" 699" 700" 701" 702" 703" 704" 705" 706" 707" 708" 709" 710" 711" 712" 713" 714" 715" 716" 717" 718" 719" 720" 721" 722" 723" 724" 725" 726" 727" 728" 729" 730" 731" 732" 733" 734" 735" 736" 737" 738" 739" 740" 741" 742" 743" 744" 745" 746" 747" 748" 749" 750" 751" 752" 753" 754" 755" 756" 757" 758" 759" 760" 761" 762" 763" 764" 765" 766" 767" 768" 769" 770" 771" 772" 773" 774" 775" 776" 777" 778" 779" 780" 781" 782" 783" 784" 785" 786" 787" 788" 789" 790" 791" 792" 793" 794" 795" 796" 797" 798" 799" 800" 801" 802" 803" 804" 805" 806" 807" 808" 809" 810" 811" 812" 813" 814" 815" 816" 817" 818" 819" 820" 821" 822" 823" 824" 825" 826" 827" 828" 829" 830" 831" 832" 833" 834" 835" 836" 837" 838" 839" 840" 841" 842" 843" 844" 845" 846" 847" 848" 849" 850" 851" 852" 853" 854" 855" 856" 857" 858" 859" 860" 861" 862" 863" 864" 865" 866" 867" 868" 869" 870" 871" 872" 873" 874" 875" 876" 877" 878" 879" 880" 881" 882" 883" 884" 885" 886" 887" 888" 889" 890" 891" 892" 893" 894" 895" 896" 897" 898" 899" 900" 901" 902" 903" 904" 905" 906" 907" 908" 909" 910" 911" 912" 913" 914" 915" 916" 917" 918" 919" 920" 921" 922" 923" 924" 925" 926" 927" 928" 929" 930" 931" 932" 933" 934" 935" 936" 937" 938" 939" 940" 941" 942" 943" 944" 945" 946" 947" 948" 949" 950" 951" 952" 953" 954" 955" 956" 957" 958" 959" 960" 961" 962" 963" 964" 965" 966" 967" 968" 969" 970" 971" 972" 973" 974" 975" 976" 977" 978" 979" 980" 981" 982" 983" 984" 985" 986" 987" 988" 989" 990" 991" 992" 993" 994" 995" 996" 997" 998" 999" 1000"

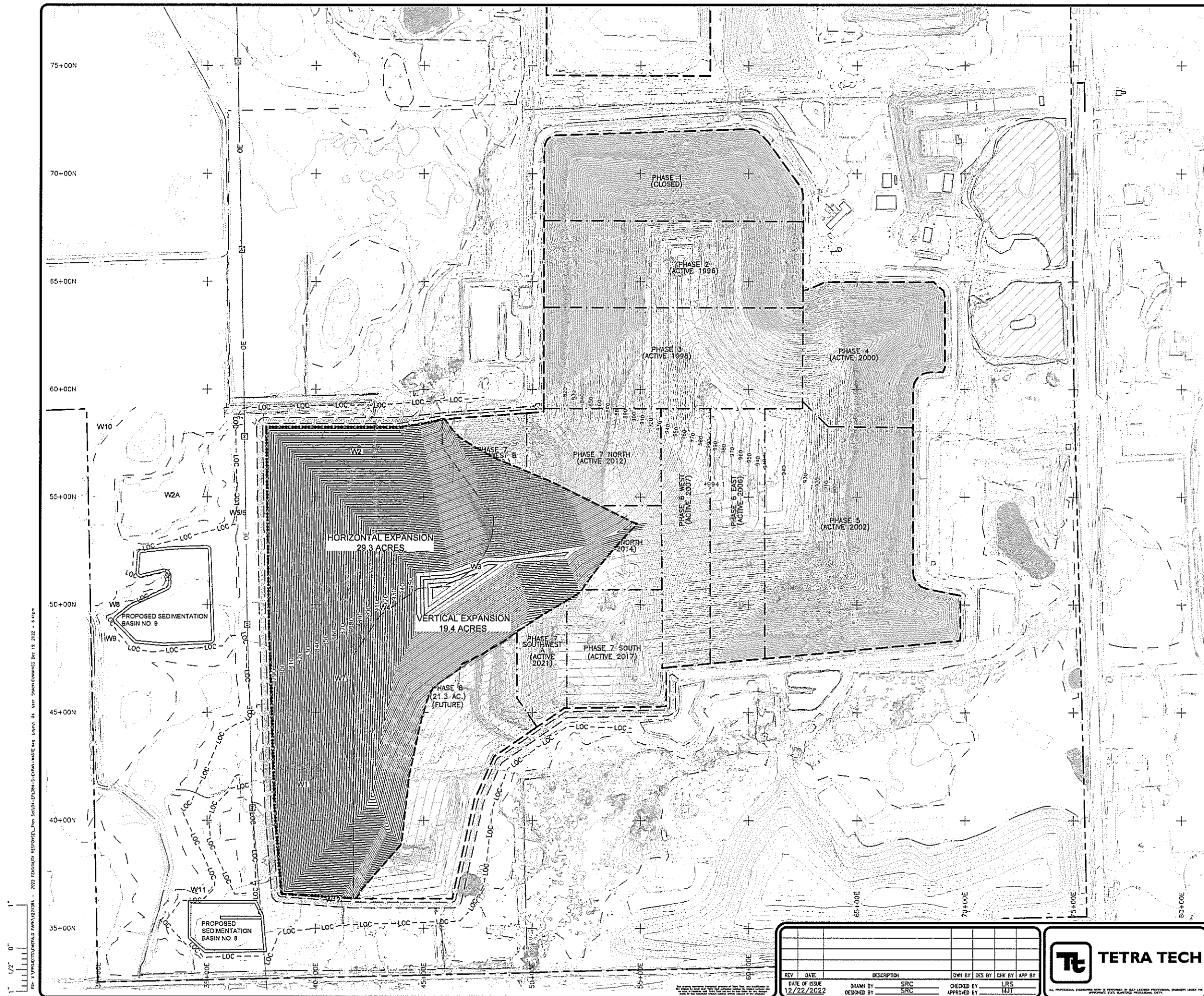
REV	DATE	DESCRIPTION	DNW BY	DES BY	CHK BY	APP BY

DATE OF ISSUE: 12/22/2022
 DRAWN BY: SRC
 DESIGNED BY: SRC
 CHECKED BY: LRS
 APPROVED BY: MGT



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
 PRACTICAL ALTERNATIVES ANALYSIS
 WESTERN EXPANSION
ALTERNATIVE 1 - WESTERN EXPANSION

FIGURE NO.
03
 PROJECT NO.
 4221384



LEGEND

- APPROXIMATE PROPERTY LINE
- ==== PAVED ROAD
- - - - UNPAVED ROAD
- - - - FENCE
- ▭ BUILDING
- 10' CONTOUR
- 2' CONTOUR
- TREES AND/OR BRUSH
- DELINEATED WETLAND
- W2 WETLAND ID PER 2015 DELINEATION REPORT
- MANMADE SURFACE WATER BODY
- SURFACE WATER BODY
- GRID INTERSECTION
- - - - PERMITTED LIMITS OF WASTE
- OVERHEAD ELECTRIC LINE
- DRAINAGE DITCH AND FLOW DIRECTION
- APPROXIMATE LIMITS OF FINAL COVER
- PROPOSED PERIMETER ROAD AND BERM
- LOC PROPOSED LIMITS OF CONSTRUCTION
- L1140 PROPOSED FINAL WASTE 10' CONTOUR
- PROPOSED FINAL WASTE 2' CONTOUR
- PROPOSED EXPANSION LIMITS
- PROPOSED HORIZONTAL EXPANSION AREA
- PROPOSED VERTICAL EXPANSION AREA

WESTERN EXPANSION VOLUME SUMMARY

CUT (CY)	FILL (CY)	NET (CY)
0	6,270,000	6,270,000 (FILL)

- NOTES:**
- 1 WETLANDS ON THIS DRAWING ARE A COMBINATION OF 2015, 2009 AND EARLIER DELINEATIONS SEE FIGURE NO 2 FOR ADDITIONAL WETLAND INFORMATION
 - 2 PROPOSED CONTOURS ARE TOP OF WASTE
 - 3 WASTE VOLUMES ARE APPROXIMATE AND SUBJECT TO CHANGE
 - 4 APPROXIMATELY 16.4 ACRES OF WETLANDS WILL BE DIRECTLY IMPACTED BY THE PROPOSED WESTERN EXPANSION, INCLUDING ALL OR PORTIONS OF W1, W2, W2A, W5/6 AND W8. APPROXIMATELY 1.3 ACRES OF WETLANDS WILL HAVE ALREADY BEEN DIRECTLY IMPACTED BY CONSTRUCTION OF THE CURRENTLY PERMITTED EPL AND LIMITS OF CONSTRUCTION, INCLUDING ALL OR PORTIONS OF W1, W2, W3, W4, W7 AND W12
 - 5 ADDITIONAL SURVEY AND SITE FEATURES INFORMATION PROVIDED ON FIGURE NO 2
 - 6 THIS ALTERNATIVE INCLUDES THE APPROVED UNCONSTRUCTED BASE LINDER AS SHOWN IN THE PLAN OF OPERATION FOR SOUTHWESTERN HORIZONTAL EXPANSION, ADDENDUM NO. 1 BY RMT (MARCH 2011)



1" = 100' (VERTICAL)
 1" = 100' (HORIZONTAL)
 DATE OF ISSUE: 12/22/2022
 DRAWN BY: SRC
 CHECKED BY: LRS
 DESIGNED BY: SRC
 APPROVED BY: MJT

REV	DATE	DESCRIPTION	DMN BY	DES BY	CHK BY	APP BY
1	12/22/2022	BASE OF ISSUE	SRC	SRC	LRS	MJT



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
 PRACTICAL ALTERNATIVES ANALYSIS
 WESTERN EXPANSION
 ALTERNATIVE 2 - WESTERN EXPANSION WITH POO BUILDOUT

FIGURE NO.
04
 PROJECT NO.
 4221384



- LEGEND**
- APPROXIMATE PROPERTY LINE
 - ==== PAVED ROAD
 - - - - UNPAVED ROAD
 - FENCE
 - █ BUILDING
 - 600 --- 10' CONTOUR
 - 2' --- 2' CONTOUR
 - TREES AND/OR BRUSH
 - DELINEATED WETLAND
 - W2 WETLAND ID PER 2015 DELINEATION REPORT
 - MANMADE SURFACE WATER BODY
 - SURFACE WATER BODY
 - + GRID INTERSECTION
 - - - - PERMITTED LIMITS OF WASTE
 - OVERHEAD ELECTRIC LINE
 - DRAINAGE DITCH AND FLOW DIRECTION
 - APPROXIMATE LIMITS OF FINAL COVER
 - PROPOSED PERIMETER ROAD AND BERM
 - LO - - - - PROPOSED LIMITS OF CONSTRUCTION
 - - - - 1140 - - - - PROPOSED FINAL WASTE 10' CONTOUR
 - - - - PROPOSED FINAL WASTE 2' CONTOUR
 - PROPOSED EXPANSION LIMITS
 - PROPOSED HORIZONTAL EXPANSION AREA

WESTERN EXPANSION VOLUME SUMMARY		
CUT (CY)	FILL (CY)	NET (CY)
0	6,270,000	6,270,000 (FILL)

- NOTES:**
- 1 WETLANDS ON THIS DRAWING ARE A COMBINATION OF 2015, 2009 AND EARLIER DELINEATIONS. SEE FIGURE NO. 2 FOR ADDITIONAL WETLAND INFORMATION
 - 2 PROPOSED CONTOURS ARE TOP OF WASTE
 - 3 WASTE VOLUMES ARE APPROXIMATE AND SUBJECT TO CHANGE
 - 4 APPROXIMATELY 16.4 ACRES OF WETLANDS WILL BE DIRECTLY IMPACTED BY THE PROPOSED WESTERN EXPANSION, INCLUDING ALL OR PORTIONS OF W1, W2, W2A, W5/6 AND W8. APPROXIMATELY 1.3 ACRES OF WETLANDS WILL HAVE ALREADY BEEN DIRECTLY IMPACTED BY CONSTRUCTION OF THE CURRENTLY PERMITTED EPL AND LIMITS OF CONSTRUCTION, INCLUDING ALL OR PORTIONS OF W1, W2, W3, W4, W7 AND W12
 - 5 ADDITIONAL SURVEY AND SITE FEATURES INFORMATION PROVIDED ON FIGURE NO. 2.
 - 6 THIS ALTERNATIVE INCLUDES THE APPROVED UNCONSTRUCTED BASE LINER AS SHOWN IN THE PLAN OF OPERATION FOR SOUTHWESTERN HORIZONTAL EXPANSION, ADDENDUM NO. 1 BY RMT (MARCH 2011)

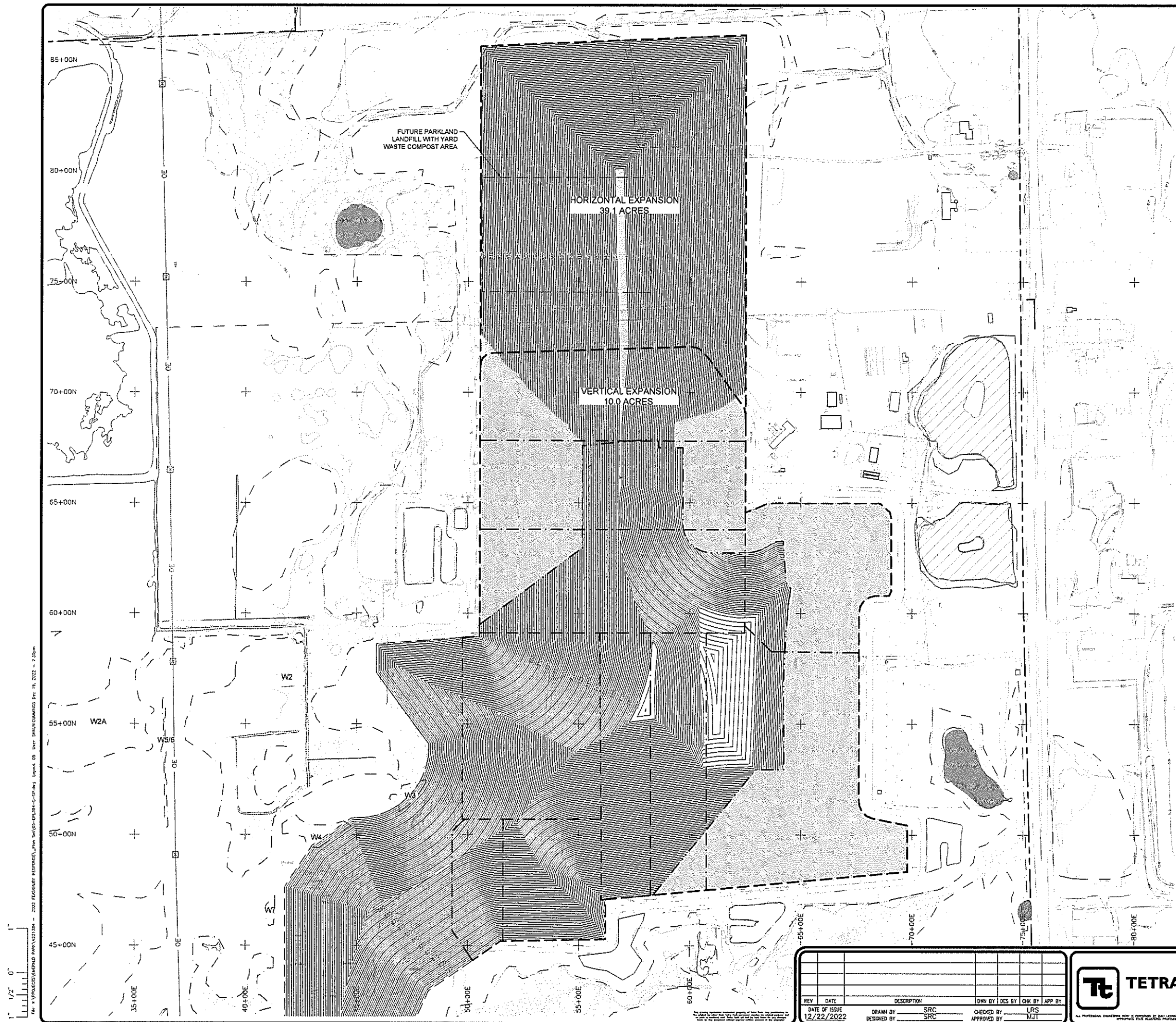
File: X:\PROJECTS\ROADS\ROAD IMP\4221384 - 2022 REGULARITY RESPONSE\Plan\PLAN-1\PLAN-1-DRAWING.DWG Layer: 44 User: SIMON CHANOWSKI Date: 19/03/2022 08:15:50
 Scale: 1/2" = 0' = 1:120
 17-Apr-2022 10:15:50 AM

REV	DATE	DESCRIPTION	DMN BY	DES BY	CHK BY	APP BY
1	12/22/2022		SRC	SRC	LRS	MJ1



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
**PRACTICAL ALTERNATIVES ANALYSIS
 WESTERN EXPANSION**
 ALTERNATIVE 2 - WESTERN EXPANSION WITH POO BASE LINER

FIGURE NO.
4A
 PROJECT NO.
 4221384

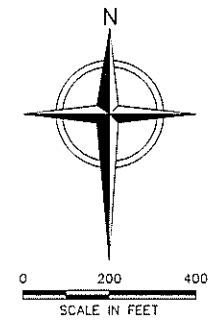


LEGEND

- APPROXIMATE PROPERTY LINE
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- BUILDING
- 10' CONTOUR
- 2' CONTOUR
- TREES AND/OR BRUSH
- DELINEATED WETLAND
- W2 WETLAND ID PER 2015 DELINEATION REPORT
- MANMADE SURFACE WATER BODY
- SURFACE WATER BODY
- GRID INTERSECTION
- PERMITTED LIMITS OF WASTE
- OVERHEAD ELECTRIC LINE
- DRAINAGE DITCH AND FLOW DIRECTION
- APPROXIMATE LIMITS OF FINAL COVER
- PROPOSED FINAL WASTE 10' CONTOUR
- PROPOSED FINAL WASTE 2' CONTOUR
- PROPOSED EXPANSION LIMITS
- PROPOSED HORIZONTAL EXPANSION AREA
- PROPOSED VERTICAL EXPANSION AREA

NORTHERN EXPANSION VOLUME SUMMARY		
CUT (CY)	FILL (CY)	NET (CY)
0	6,560,000	6,560,000 (FILL) [SEE NOTE 3]

- NOTES:**
- 1 PROPOSED CONTOURS ARE TOP OF WASTE
 - 2 WASTE VOLUMES ARE APPROXIMATE AND SUBJECT TO CHANGE
 - 3 WASTE VOLUMES INCLUDE EXCAVATION OF CLOSED FUTURE PARKLAND DEVELOPMENT, INC. LANDFILL
 - 4 APPROXIMATELY 2.8 ACRES OF WETLAND WILL BE IMPACTED BY THE ALTERNATIVE 2 - NORTHERN EXPANSION
 - 5 ADDITIONAL SURVEY AND SITE FEATURES INFORMATION PROVIDED ON FIGURE NO 2



1" = 1/2" 0'
 File: Y:\PROJECTS\EMERALD PARK\1221384 - 2022 PRACTICAL ALTERNATIVES\1221384_1222.dwg User: DWY/COMADGOS Dec 16, 2022 1:25pm

REV	DATE	DESCRIPTION	DRN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE: 12/22/2022
 DRAWN BY: SRC
 DESIGNED BY: SRC
 CHECKED BY: LRS
 APPROVED BY: MJT



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
 PRACTICAL ALTERNATIVES ANALYSIS
 WESTERN EXPANSION
ALTERNATIVE 3 - NORTHERN EXPANSION

FIGURE NO.
05
 PROJECT NO.
 4221384



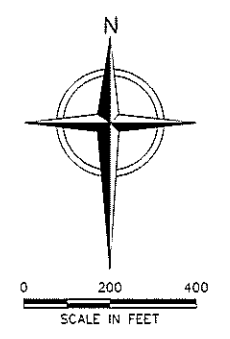
LEGEND

- APPROXIMATE PROPERTY LINE
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- BUILDING
- 1' CONTOUR
- 2' CONTOUR
- TREES AND/OR BRUSH
- DELINEATED WETLAND
- WETLAND ID PER 2015 DELINEATION REPORT
- MANMADE SURFACE WATER BODY
- SURFACE WATER BODY
- GRID INTERSECTION
- PERMITTED LIMITS OF WASTE
- OVERHEAD ELECTRIC LINE
- DRAINAGE DITCH AND FLOW DIRECTION
- APPROXIMATE LIMITS OF FINAL COVER
- PROPOSED FINAL WASTE 1' CONTOUR
- PROPOSED FINAL WASTE 2' CONTOUR
- PROPOSED EXPANSION LIMITS
- PROPOSED HORIZONTAL EXPANSION AREA
- PROPOSED VERTICAL EXPANSION AREA

SOUTHERN EXPANSION VOLUME SUMMARY

CUT (CY)	FILL (CY)	NET (CY)
0	8,950,000	8,950,000 (FILL)

- NOTES:**
- 1 PROPOSED CONTOURS ARE TOP OF WASTE
 - 2 WASTE VOLUMES ARE APPROXIMATE AND SUBJECT TO CHANGE
 - 3 APPROXIMATELY 15.9 ACRES OF WETLAND WILL BE IMPACTED BY THE ALTERNATIVE 3 - SOUTHERN EXPANSION
 - 4 ADDITIONAL SURVEY AND SITE FEATURES INFORMATION PROVIDED ON FIGURE NO. 2.



1" = 1/2" 0'
 File: K:\PROJECTS\EMERALD PARK\1212124 - 2022 PRACTICAL RESPONSE\1212124.dwg Layer: 05 User: DWIGHT.DONOVAN Dec 15, 2022 - 2:23pm

REV	DATE	DESCRIPTION	DMN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE: 12/22/2022
 DRAWN BY: SRC
 DESIGNED BY: SRC
 CHECKED BY: LRS
 APPROVED BY: M31



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
 PRACTICAL ALTERNATIVES ANALYSIS
 WESTERN EXPANSION
ALTERNATIVE 4 - SOUTHERN EXPANSION

FIGURE NO.
06
 PROJECT NO.
 4221384



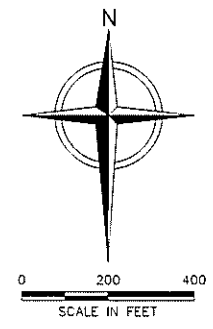
LEGEND

- APPROXIMATE PROPERTY LINE
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- BUILDING
- 10' CONTOUR
- 2' CONTOUR
- TREES AND/OR BRUSH
- DELINEATED WETLAND
- W2 WETLAND ID PER 2015 DELINEATION REPORT
- MANMADE SURFACE WATER BODY
- SURFACE WATER BODY
- GRID INTERSECTION
- PERMITTED LIMITS OF WASTE
- OVERHEAD ELECTRIC LINE
- DRAINAGE DITCH AND FLOW DIRECTION
- APPROXIMATE LIMITS OF FINAL COVER
- PROPOSED FINAL WASTE 10' CONTOUR
- PROPOSED FINAL WASTE 2' CONTOUR
- PROPOSED EXPANSION LIMITS
- PROPOSED HORIZONTAL EXPANSION AREA
- PROPOSED VERTICAL EXPANSION AREA

NORTHWESTERN EXPANSION VOLUME SUMMARY

CUT (CY)	FILL (CY)	NET (CY)
0	8,160,000	8,160,000 (FILL)

- NOTES:**
- 1 PROPOSED CONTOURS ARE TOP OF WASTE
 - 2 WASTE VOLUMES ARE APPROXIMATE AND SUBJECT TO CHANGE
 - 3 APPROXIMATELY 19.5 ACRES OF WETLANDS WILL BE DIRECTLY IMPACTED BY ALTERNATIVE 5 - NORTHWESTERN EXPANSION. APPROXIMATELY 0.21 ACRES OF WETLAND W2 WILL HAVE ALREADY BEEN DIRECTLY IMPACTED BY CONSTRUCTION OF THE CURRENTLY PERMITTED EPL AND LIMITS OF CONSTRUCTION, AS SHOWN ON FIGURE NO. 7
 - 4 ADDITIONAL SURVEY AND SITE FEATURES INFORMATION PROVIDED ON FIGURE NO. 2



1" = 1/2" 0' 1" 2" 3" 4" 5" 6" 7" 8" 9" 10" 11" 12" 13" 14" 15" 16" 17" 18" 19" 20" 21" 22" 23" 24" 25" 26" 27" 28" 29" 30" 31" 32" 33" 34" 35" 36" 37" 38" 39" 40" 41" 42" 43" 44" 45" 46" 47" 48" 49" 50" 51" 52" 53" 54" 55" 56" 57" 58" 59" 60" 61" 62" 63" 64" 65" 66" 67" 68" 69" 70" 71" 72" 73" 74" 75" 76" 77" 78" 79" 80" 81" 82" 83" 84" 85" 86" 87" 88" 89" 90" 91" 92" 93" 94" 95" 96" 97" 98" 99" 100"

REV	DATE	DESCRIPTION	DNW BY	DES BY	CHK BY	APP BY

DATE OF ISSUE: 12/22/2022
 DRAWN BY: SRC
 DESIGNED BY: SRC
 CHECKED BY: LRS
 APPROVED BY: MJT



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
 PRACTICAL ALTERNATIVES ANALYSIS
 WESTERN EXPANSION
ALTERNATIVE 5 - NORTHWESTERN EXPANSION

FIGURE NO.
07
 PROJECT NO.
 4221384



LEGEND

	APPROXIMATE PROPERTY LINE
	PAVED ROAD
	UNPAVED ROAD
	FENCE
	BUILDING
	10' CONTOUR
	2' CONTOUR
	TREES AND/OR BRUSH
	DELINEATED WETLAND
	W2 WETLAND ID PER 2015 DELINEATION REPORT
	MANMADE SURFACE WATER BODY
	SURFACE WATER BODY
	GRID INTERSECTION
	PERMITTED LIMITS OF WASTE
	OVERHEAD ELECTRIC LINE
	DRAINAGE DITCH AND FLOW DIRECTION
	APPROXIMATE LIMITS OF FINAL COVER
	PROPOSED LIMITS OF CONSTRUCTION
	PROPOSED FINAL WASTE 10' CONTOUR
	PROPOSED FINAL WASTE 2' CONTOUR
	PROPOSED EXPANSION LIMITS
	PROPOSED HORIZONTAL EXPANSION AREA
	PROPOSED VERTICAL EXPANSION AREA

- NOTES:**
- 1 WETLANDS ON THIS DRAWING ARE A COMBINATION OF 2015, 2009 AND EARLIER DELINEATIONS SEE SHEET 2 FOR ADDITIONAL WETLAND INFORMATION
 - 2 PROPOSED CONTOURS ARE APPROVED TOP OF WASTE GRADES FROM THE SOUTHWESTERN HORIZONTAL EXPANSION PLAN OF OPERATION BY RMT (MARCH 2011)
 - 3 THE LIMITS OF WASTE FOR THE CURRENTLY PERMITTED EPL (PHASES 1-8) WERE APPROVED BY THE WDNR IN 2011, BASED ON THE 2009 WETLAND DELINEATION SINCE THE WETLAND DELINEATION WAS REVISED IN 2015, THE CURRENTLY PERMITTED EPL AND LIMITS OF CONSTRUCTION WILL NOW DIRECTLY IMPACT APPROXIMATELY 1.27 ACRES OF WETLANDS, INCLUDING ALL OR PORTIONS OF W1, W2, W3, W4, W7 AND W12
 - 4 ADDITIONAL SURVEY AND SITE FEATURES INFORMATION PROVIDED ON FIGURE NO 2



1" = 1/2" 0'
 12/22/2022 12:22:22 PM V:\PROJECTS\EMERALD PARK\2022\FIGURE 2\FIGURE 2.dwg User: dmccomb Date: 12/22/2022 12:22:22 PM

REV	DATE	DESCRIPTION	DRN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE: 12/22/2022
 DRAWN BY: SRC
 CHECKED BY: LRS
 DESIGNED BY: SRC
 APPROVED BY: MJT



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
 PRACTICAL ALTERNATIVES ANALYSIS
 WESTERN EXPANSION
ALTERNATIVE 6 - NO EXPANSION

FIGURE NO.
08
 PROJECT NO.
 4221384



Legend

Parcel Locations & Parcel ID

Access Easement

0 125 250 500 Feet

SOURCE: Parcel data from the Statewide Parcel Map Initiative V5, 2019

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

PREPARED BY:
SSW

APPROVED BY:
MT

DATE CREATED:
12/22/2022

Tt TETRA TECH

PREPARED BY: TETRA TECH

This drawing represents intellectual property of Tetra Tech. Any modification to the original by other than Tetra Tech personnel violates its original purpose and as such is rendered void. Tetra Tech will not be held liable for any changes made to this document without express written consent of the originator.

EMERALD PARK LANDFILL
MUSKEGO, WISCONSIN

**WETLAND MITIGATION BANK
PARCEL OVERVIEW**

FIGURE NO.
9

PROJECT NO.
421384

W:\MUSKEGO\PROJECTS\EMERALD LANDFILL\PARCELS\PARCELS_1_COVERED\022224



Legend (2002)

Proposed Mitigation Design

- Shallow Marsh
- Mesic Prairie
- Oak Savanna
- Fresh (Wet) Meadow
- Shrub Carr
- Water
- Trail
- Viewing Platform
- Drain Tile

Legend (2019)*

- 2019 Plant Communities



*The 2019 Plant Communities were field verified on 10/15/19.

Plant Community		Compensation Type	Acres
Mesic Prairie	MP-1	Buffer	3.28
	MP-2	Buffer	13.01
	MP-3	Buffer	0.66
	MP-4	Buffer	0.62
Oak Savanna	OS-1	Buffer	0.41
Shallow Marsh	SM-1	Enhancement (6.57ac) and Restoration (14.24ac)	20.81
Deep Marsh	DM	Enhancement (6.57ac) and Restoration (2.03ac)	8.6
Shrub-Carr	SC-1	Enhancement	0.86
Wet Meadow	WM-1	Enhancement (0.60ac) and Restoration (1.12ac)	1.72
	WM-2	Restoration	0.16
	WM-3	Enhancement (1.96ac) and Restoration (2.61ac)	4.57
	WM-4	Enhancement (2.86ac) and Restoration (15.77ac)	18.63
	WM-5	Enhancement	1.41

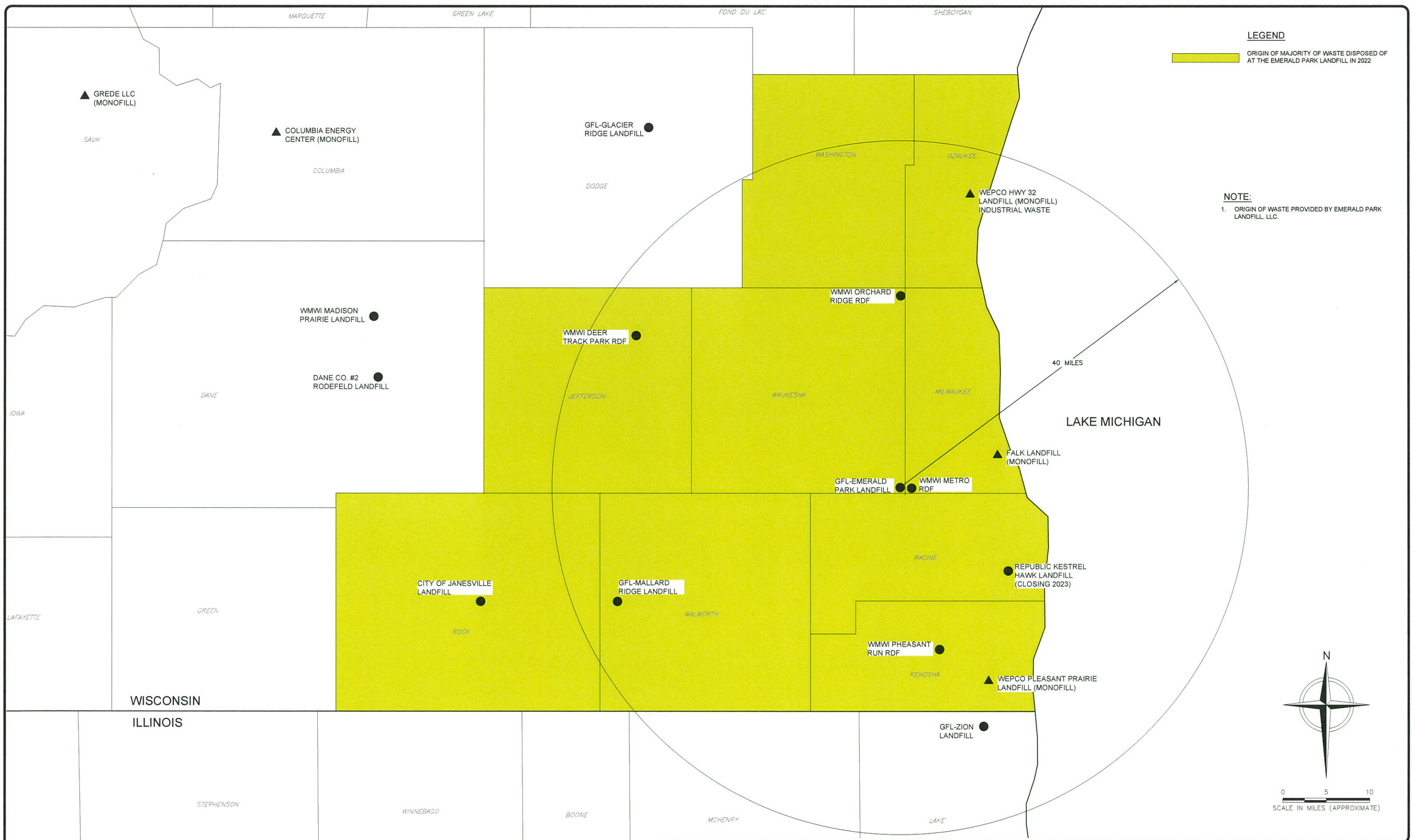
PREPARED BY:
SSW
APPROVED BY:
MT
DATE CREATED:
12/22/2022



EMERALD PARK LANDFILL
MUSKEGO, WISCONSIN
WETLAND MITIGATION BANK
2002 and 2019 PLANT COMMUNITIES

FIGURE NO
10
PROJECT NO
4221384

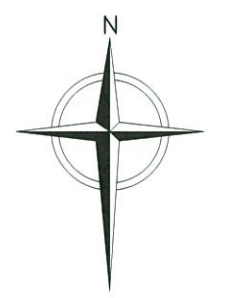
File: X:\PROJECTS\EMERALD PARK\421384 - 2022 FEASIBILITY RESPONSE\Plan Set\09-198652-5-SP.dwg Layout: 11 User: SHAWNCUMMINGS Dec 19, 2022 - 8:05pm
 1" = 1/2" 0" 1"



LEGEND
 [Yellow Shaded Area] ORIGIN OF MAJORITY OF WASTE DISPOSED OF AT THE EMERALD PARK LANDFILL IN 2022

NOTE:
 1. ORIGIN OF WASTE PROVIDED BY EMERALD PARK LANDFILL, LLC.

40 MILES



0 5 10
 SCALE IN MILES (APPROXIMATE)

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE: 12/22/2022
 DRAWN BY: SRC
 DESIGNED BY: SRC
 CHECKED BY: LRS
 APPROVED BY: MJT

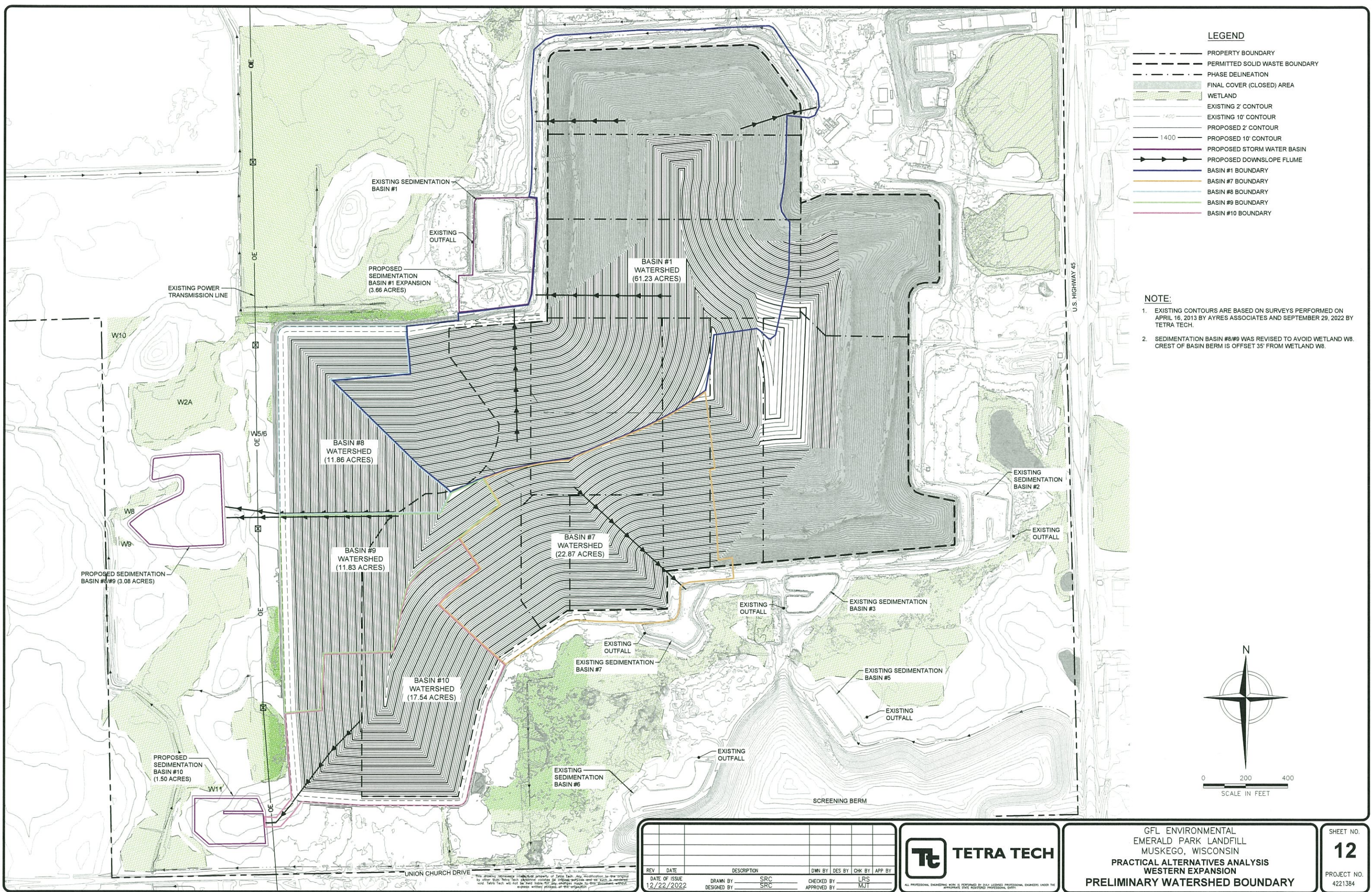


GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
PRACTICAL ALTERNATIVES ANALYSIS
WESTERN EXPANSION
REGIONAL SOLID WASTE MANAGEMENT ALTERNATIVES

FIGURE NO.
11
 PROJECT NO.
 4221384

The quality represents professional property of Tetra Tech. All information is the property of Tetra Tech. Tetra Tech reserves the right to modify the information without notice. All information is provided for informational purposes only. Tetra Tech is not responsible for any errors or omissions in this document. All information is provided for informational purposes only.

1" = 1/2" 0" 1"
 File: X:\PROJECTS\EMERALD PARK\4221384 - 2022 FEASIBILITY RESPONSE\Plan Set\12-EP4221384-5-SP_WATERSHED.dwg Layout: 12 User: rbananayy Dec: 27, 2022 - 12:47pm



- LEGEND**
- PROPERTY BOUNDARY
 - PERMITTED SOLID WASTE BOUNDARY
 - PHASE DELINEATION
 - FINAL COVER (CLOSED) AREA
 - WETLAND
 - EXISTING 2' CONTOUR
 - 1400 --- EXISTING 10' CONTOUR
 - 1400 --- PROPOSED 2' CONTOUR
 - PROPOSED 10' CONTOUR
 - PROPOSED STORM WATER BASIN
 - PROPOSED DOWNSLOPE FLUME
 - BASIN #1 BOUNDARY
 - BASIN #7 BOUNDARY
 - BASIN #8 BOUNDARY
 - BASIN #9 BOUNDARY
 - BASIN #10 BOUNDARY

- NOTE:**
1. EXISTING CONTOURS ARE BASED ON SURVEYS PERFORMED ON APRIL 16, 2013 BY AYRES ASSOCIATES AND SEPTEMBER 29, 2022 BY TETRA TECH.
 2. SEDIMENTATION BASIN #8/9 WAS REVISED TO AVOID WETLAND W8. CREST OF BASIN BERM IS OFFSET 35' FROM WETLAND W8.



REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
	12/22/2022		SRC		LRS	
			SRC		MJT	



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN
PRACTICAL ALTERNATIVES ANALYSIS
WESTERN EXPANSION
PRELIMINARY WATERSHED BOUNDARY

SHEET NO.
12
 PROJECT NO.
 4221384

This drawing represents intellectual property of Tetra Tech. Any modification to the original by other than Tetra Tech personnel constitutes an implied warranty on the part of the user. Tetra Tech will not be held liable for any damages made to this document without express written consent of the originator.

1" = 120' 0" 0' 0" 0" 0" 0"
 W:\PROJECTS\EMERALD PARK\2022\2022 FEASIBILITY RESPONSE\DWG\10000\10000-01.DWG: PHE-POST-IMP-LAYOUT-DRAIN-10000-01.DWG User: SCOTT WILSON Date: 02/06/2023 12:30pm



LEGEND

- APPROXIMATE PROPERTY LINE
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- BUILDING
- TREES AND/OR BRUSH
- DELINEATED WETLAND
- WETLAND ID PER 2015 DELINEATION REPORT
- MANMADE SURFACE WATER BODY
- SURFACE WATER BODY
- GRID INTERSECTION
- PERMITTED LIMITS OF WASTE
- OVERHEAD ELECTRIC LINE
- DRAINAGE DITCH AND FLOW DIRECTION
- PROPOSED EXPANSION LIMITS
- PROPOSED STREAM REALIGNMENT
- EXISTING NAVEGABLE STREAM TO BE REALIGNED
- EXISTING NAVEGABLE STREAM (NO PROPOSED IMPACTS)
- PROPOSED UPLAND SWALE
- EXISTING DRAINAGE AREA
- PROPOSED ADDITIONAL DRAINAGE AREA
- TIME OF CONCENTRATION ROUTE

NOTES:

1. AERIAL PHOTOGRAPH BY COOPER AERIAL SURVEYS ON APRIL 27, 2022 AND BY SRMC ON APRIL 8, 2017.
2. WETLANDS ON THIS DRAWING ARE A COMBINATION OF 2015, 2009 AND EARLIER DELINEATIONS.
3. EXISTING NAVEGABLE STREAM AREAS IDENTIFIED BY WDNR DURING 2007 AND 2014 FIELD VISITS.
4. PRELIMINARY RECONFIGURATION OF BOUNDARIES TO AVOID IMPACTS TO WETLAND W6 (DESIGN NOT FINALIZED)
5. MAINTAIN 35' SETBACK FROM CREST OF BASIN BERM TO ORDINARY HIGH WATER MARK OF PROPOSED STREAM



REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
	02/06/2023		SSW			



GFL ENVIRONMENTAL
 EMERALD PARK LANDFILL
 MUSKEGO, WISCONSIN

**WESTERN EXPANSION
 DRAINAGE AREA MAP**

FIGURE NO.
13

PROJECT NO.
 4221384