Technical Memo

WENCK ASSOCIATES

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To: **Geoff Strack, P.E., SKB Environmental Cloquet Landfill Inc., f/n/a Shamrock Landfill, Inc.**

From: Brad Sullivan, P.E., Wenck Associates, Inc.

Date: January 9, 2019

Subject: SKB Environmental Cloquet Landfill – 2018 Annual CCR Inspection
Wenck Project # B3053-0137

I hereby certify that this engineering document was prepared by me or under my direct supervision and that I am a duly registered Professional Engineer under the laws of the State of Minnesota.

Bradley W Sullivan  January 9, 2019
PE # 56502

Purpose

This memorandum fulfills the requirements of 40 CFR § 257.84 Inspection Requirements for coal combustion residue (CCR) Surface Landfills, Part b, regarding an annual inspection by a qualified professional engineer.

Background and Applicability

SKB Environmental Cloquet Landfill Inc., f/n/a Shamrock Landfill, Inc. owns and operates the Shamrock Environmental Landfill which is a secure landfill permitted to accept industrial waste, including CCR waste. The facility is situated on an approximately 59-acre parcel of land located at Section 25, Township 49 North, Range 17 West, Carlton County with a street address of 761 MN Highway 45 in Cloquet, Minnesota. Currently, 17.8 acres of lined landfill are constructed of the permitted 41.5-acre footprint. Construction of Phase 5A & 6A was substantially complete in July 2018.

Prior to the completion of Phase 5A & 6A, filling operations were primarily in Phases 3 and 4, though some waste was disposed in Phases 1 & 2. Following their completion, filling operations were primarily in 5A &6A, although Phases 1 through 4 remained operational and received some waste. The Facility is operated under the MPCA Solid Waste Permit SW-399.

See Figure 1 for a facility site plan.

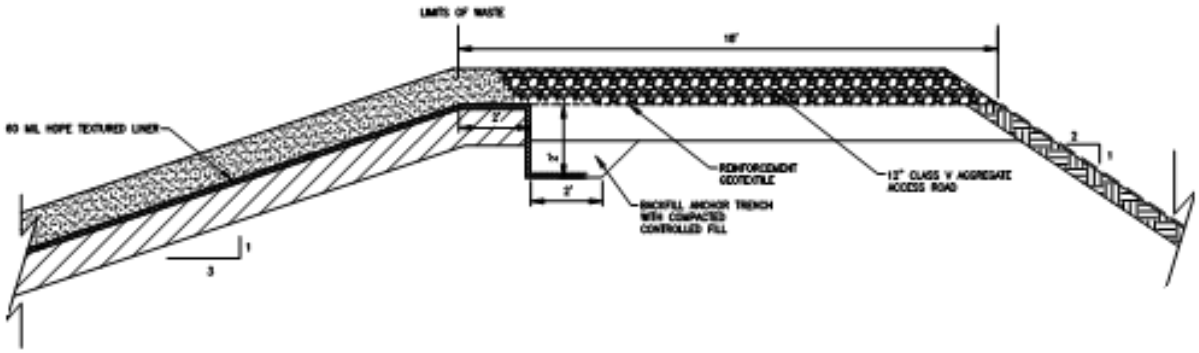
CCR Landfill Inspection (40 CFR § 257.84)

On November 5, 2018, Mr. Geoff Strack, P.E. of Waste Connections and Mr. Brad Sullivan, P.E. of Wenck and conducted the on-site inspection of the CCR Landfill. As part of the inspection, the following operating and inspection records were reviewed:

- Review of weekly visual CCR inspections performed by landfill operators;
- Previous annual inspections performed by a licensed professional engineer;
- CCR unit design and construction information required by § 257.73(c)(1); and
- Previous periodic structural stability assessments required under § 257.73(d).

It should be noted that §257.74 does not apply as the site is not new, nor is it a lateral expansion of an existing impoundment/landfill, therefore this is not addressed.

Landfill Cell Design
Most of the facility's landfill cell embankments were constructed using on-site borrow material, which consisted of silty clay and clayey sand type soils. The fill was placed and compacted to 95% of Standard Proctor Dry Density in lift thicknesses ranging from 8 inches to 12 inches. The final subgrade surface was proof rolled prior to geosynthetics installation. A typical perimeter section taken from the Phase 3 and 4 Construction Documentation Report prepared by Wenck in September 2015 is shown below.



Typical Landfill Berm Detail

During the inspection, no signs of landfill cell embankment distress, no signs of waste slope instability, or other CCR landfill issues were observed. The landfill embankments and interim covered slopes were generally in good condition with a well-established vegetation cover and no signs of significant erosion.

Photos were taken during the inspection. Figure 1 presents the photo locations, and Attachment 1 contains a photo log and the photos taken.

CCR Landfill Inspection Report

40 CFR § 257.84, Subpart b.2 requires the following topics in italics be addressed within this report. The requirements are shown in italics with the response immediately afterwards for each item.

(i) Any changes in geometry of the impounding structure since the previous annual inspection;

Cells 5A and 6A were constructed during May through July 2018. The southern limit of each cell is terminated with "rain flap" with the primary liner running out for future connection. The east and west embankments appeared per the Record Drawings.

There were no apparent changes to the embankment geometry of Cells 1, 2, 3, or 4 when compared to the permit drawings or the past inspection reports. The annual aerial photogrammetry survey was performed on November 12, which the estimated in-place volume is based on. A comparison 2018 and 2017 aerial survey confirm that the embankment and slope topography is substantially unchanged with no significant movement. The 2018 aerial survey is included as Figure 2.

(ii) The approximate volume of CCR contained in the unit at the time of the inspection;

The approximate volume of CCR material contained in the landfill at the time of the inspection is 47,900 cubic yards.

(iii) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures; and

None of the following were observed that could indicate structural weakness;

- Signs of slumping or rotational movement;
- Lateral or vertical distortion of the embankment crest;
- Seepage on the outboard slope; or
- Borrowing or damage due to vectors.

(iv) Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.

There were no changes noted that may could potentially affect the stability or operation of the impoundment. Observations were consistent with those noted in that report.

Notification Requirements

Shamrock Landfill is in compliance with the recordkeeping requirements specified in § 257.105(g), the notification requirements specified in § 257.106(g), and the internet requirements specified in § 257.107(g).

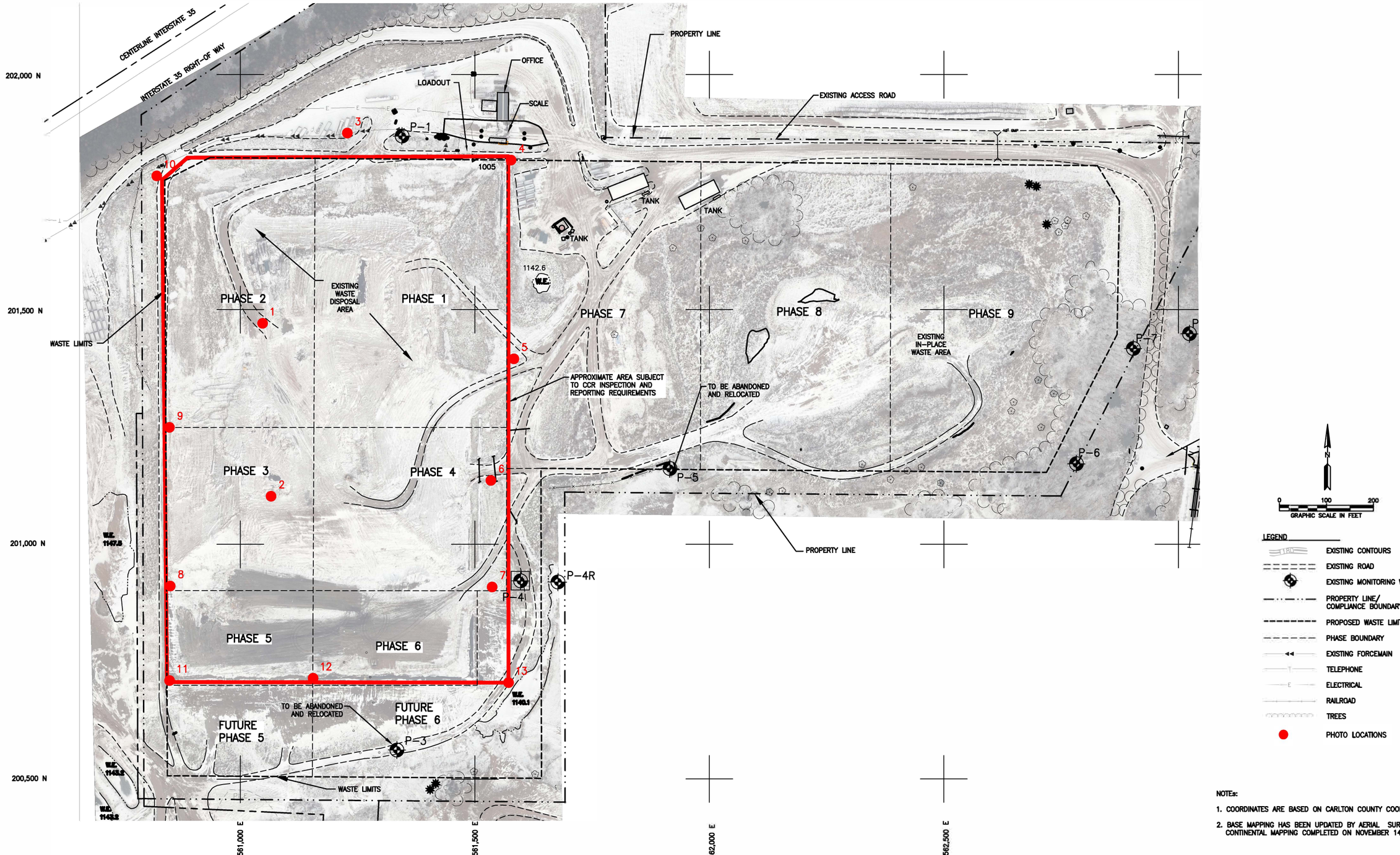
Conclusions and Recommendations

All recommendations presented in the previous inspection report were implemented.

The SKB Environmental Cloquet Landfill facility has been constructed in operated in accordance with the facility permit and the CCR regulations. No embankment or waste slope stability issues were observed during the visual inspection.

40 CFR § 257.83, Subpart b.5 and 40 CFR § 257.84, Subpart b.5 each require that if a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.

There were no deficiencies or releases identified during the inspection that require remedy as soon as possible.



NOTEs:

1. COORDINATES ARE BASED ON CARLTON COUNTY COORDINATE SYSTEM.
2. BASE MAPPING HAS BEEN UPDATED BY AERIAL SURVEY PROVIDED BY CONTINENTAL MAPPING COMPLETED ON NOVEMBER 14, 2018.

REV	REVISION DESCRIPTION	DWN	APP	REV DATE

SEAL

SUB CONSULTANT

PRIME CONSULTANT
WENCK ASSOCIATES
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1800 PIONEER CREEK CENTER
MAPLE PLAIN, MINNESOTA
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PROJECT TITLE
2018 CCR INSPECTION REPORT

SKB ENVIRONMENTAL CLOQUET LANDFILL, INC.
f/n/a SHAMROCK LANDFILL, INC

CLOQUET, MINNESOTA

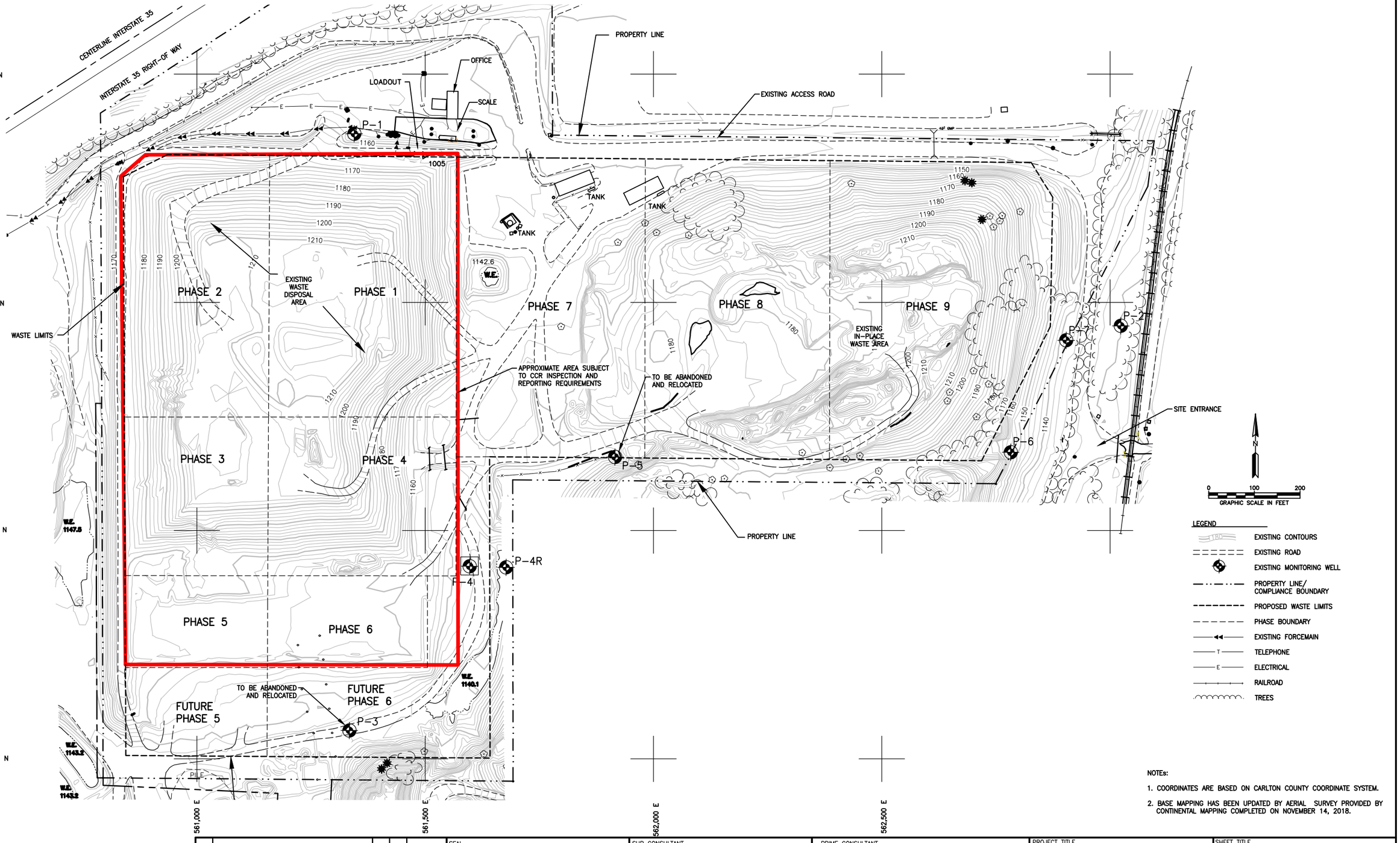
SHEET TITLE
PHOTO LOCATIONS

DWN BY	CHK'D	APP'D	DWG DATE	JAN. 2019
JVB	SH	TJS	SCALE	AS NOTED

PROJECT NO.	SHEET NO.	REV NO.
3053-0137	FIGURE 1	0

Plot Date & Time: 4 January 2019 12:38 PM

M:\3053\Cloquet_Shamrock\2018 CCR Report\cdr\cad\FIGURE 1 PHOTO LOCATIONS.dwg



LEGEND

- EXISTING CONTOURS
- EXISTING ROAD
- EXISTING MONITORING WELL
- PROPERTY LINE/ COMPLIANCE BOUNDARY
- PROPOSED WASTE LIMITS
- PHASE BOUNDARY
- EXISTING FORCEMAIN
- TELEPHONE
- ELECTRICAL
- RAILROAD
- TREES

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PROJECT TITLE
2018 CCR INSPECTION REPORT

SKB ENVIRONMENTAL CLOQUET LANDFILL, INC.
f/n/a SHAMROCK LANDFILL, INC.

CLOQUET, MINNESOTA

SHEET TITLE
SITE MAP

DWN BY	CHK'D	APP'D	DWG DATE
JVB	SH	TJS	JAN. 2019

SCALE AS NOTED

PROJECT NO.	SHEET NO.	REV NO.
3053-0137	FIGURE 2	0

SKB Environmental
Cloquet Landfill Inc., dba Shamrock Landfill, Inc.
2018 Site Inspection Report Photo List
11/5/2018

Photo #	Photo Location	View Direction	Description
1	1	South	Phase 2/3 Upper Lifts
2	1	Northeast	Phase 2/1 Upper Lifts
3	2	North	Phase 3/4 Upper Lifts
4	3	East	Phase 1 Northern Waste Slope
5	3	West	Phase 2 Northern Waste Slope & Berm
6	4	South	Phase 1 Eastern Berm
7	4	West	Phase 1 Northern Berm
8	5	Southwest	Phase 1 Southern Access Road
9	5	North	Phase 1 Northern Access Road
10	6	South	Phase 4 Eastern Berm and Waste Slope
11	6	North	Phase 4 Eastern Berm & Phase 1 Southeast Corner
12	7	North	Phase 4 Eastern LF Berm and Waste Slope
13	7	West	Phase 4 Southern Waste Slope / 7A Interior Active Filling
14	8	North	Phase 3 Western Waste Slope
15	8	North	Phase 3 LF Western Berm
16	8	South	Phase 6 Western LF Berm
17	8	South	Phase 6 Interior (Future Western Waste Slope)
18	8	East	Phase 3 Southern Interior Waste Slope
19	9	North	Phase 2 Western Waste Slope & Road
20	9	North	Phase 2 Perimeter Road
21	9	North	Phase 2 Western Berm
22	9	South	Phase 3 Western Berm
23	9	South	Phase 3 Perimeter Road
24	9	South	Phase 3 Waste Slope
25	10	South	Phase 2 Perimeter Road
26	10	South	Phase 2 Western Berm
27	10	East	Phase 2 Road & Berm
28	11	North	Phase 6 Western LF Berm
29	11	North	Phase 6 Interior (Future Waste Slope)
30	11	East	Phase 6A/7A Southern Rain Flap
31	11	Northeast	Phase 6A Active Filling Area
32	12	West	Cell 6A Southern Rain Flap
33	12	East	Cell 7A Southern Rain Flap
34	13	West	Cell 7A Southern Rain Flap
35	13	North	Cell 7 Eastern Berm

Photo 1: Location 1 – Looking South, Phase 2/3 Upper Lifts

Photo 2: Location 1 – Looking Northeast, Phase 2/1 Upper Lifts

Photo 3: Location 2 – Looking North, Phase 3/4 Upper Lifts

Photo 4: Location 3 – Looking East, Phase 1 Northern Waste Slope

Photo 5: Location 3 – Looking West, Phase 2 Northern Waste Slope & Berm

Photo 6: Location 4 – Looking South, Phase 1 Eastern Berm

Photo 7: Location 4 – Looking West, Phase 1 Northern Berm

Photo 8: Location 5 – Looking Southwest, Phase 1 Southern Access Road

Photo 9: Location 5 – Looking North, Phase 1 Northern Access Road

Photo 10: Location 6 – Looking South, Phase 4 Eastern Berm and Waste Slope

Photo 11: Location 6 – Looking North, Phase 4 Eastern Berm & Phase 1 Southeast Corner

Photo 12: Location 7 – Looking North, Phase 4 Eastern LF Berm and Waste Slope

Photo 13: Location 7 – Looking West, Phase 4 Southern Waste Slope / 7A Interior Active Filling

Photo 14: Location 8 – Looking North, Phase 3 Western Waste Slope

Photo 15: Location 8 – Looking North, Phase 3 LF Western Berm

Photo 16: Location 8 – Looking South, Phase 6 Western LF Berm

Photo 17: Location 8 – Looking South, Phase 6 Interior (Future Western Waste Slope)

Photo 18: Location 8 – Looking East, Phase 3 Southern Interior Waste Slope

Photo 19: Location 9 – Looking North, Phase 2 Western Waste Slope & Road

Photo 20: Location 9 – Looking North, Phase 2 Perimeter Road

Photo 21: Location 9 – Looking North, Phase 2 Western Berm

Photo 22: Location 9 – Looking South, Phase 3 Western Berm

Photo 23: Location 9 – Looking South, Phase 3 Perimeter Road

Photo 24: Location 9 – Looking South, Phase 3 Waste Slope

Photo 25: Location 10 – Looking South, Phase 2 Perimeter Road

Photo 26: Location 10 – Looking South, Phase 2 Western Berm

Photo 27: Location 10 – Looking East, Phase 2 Road & Berm

Photo 28: Location 11 – Looking North, Phase 6 Western LF Berm

Photo 29: Location 11 – Looking North, Phase 6 Interior (Future Waste Slope)

Photo 30: Location 11 – Looking East, Phase 6A/7A Southern Rain Flap

Photo 31: Location 11 – Looking Northeast, Phase 6A Active Filling Area

Photo 32: Location 12 – Looking West, Cell 6A Southern Rain Flap

Photo 33: Location 12 – Looking East, Cell 7A Southern Rain Flap

Photo 34: Location 13 – Looking West, Cell 7A Southern Rain Flap

Photo 35: Location 13 – Looking North, Cell 7 Eastern Berm