

Attachment 6

Postclosure Plan

Modified – November 3, 2010 (Revised Cap Elevation Survey Plan)

Cap Elevation Survey Plan
for
Salzburg Landfill
Rev. 1

Introduction

Dow undertook an investigation in August 2008 to determine if settlement was occurring on previously capped cells at Salzburg Landfill (SLF). The investigation was performed to establish a basis for specifying a time frame for future surveys of capped cells at SLF to ensure settlement was not becoming an issue.

The investigation involved surveying capped Cells #17 through #19 (Cells 17/19) and capped Cells #40 through #43 (Cells 40/43). Both of these cells were capped in 2005. The survey involved determining the current top of cap elevation at approximately 20 points, oriented in 3 cross sections. The survey results were compared to the original design elevations to determine if settlement was occurring.

The data from the August 2008 survey and the original design elevation comparison are shown on attached drawings B2-100-854 (Cells 17/19) and B2-100-853 (Cells 40/43). The average change in elevation for all of points surveyed on each cap is less than 0.1' from the plan elevations. The largest elevation deviation is in a line along the topsoil berm on the east side of Cells 17/19 (see Points 7, 14 & 21 on B2-100-854). The average elevation change for these three points is 0.3 feet. The current cap slope in this area was calculated and found to be very close to the design cap slope as shown in the following table:

<u>SURVEY POINT¹</u>	<u>CURRENT SLOPE BETWEEN POINTS</u>	<u>DESIGN SLOPE</u>
7		
	0.9%	1%
14		
	1.2%	1%
21		

These findings indicate that there are no settlement issues on the Cells 17/19 or Cells 40/43 caps. Dow believes this is true for all capped cells at Salzburg Landfill which is supported by these two facts:

1. Ponding has never occurred on any of the caps which are visually inspected after every ½" rainfall; and
2. No caps have experienced sink holes or differential settlement requiring a repair in the past 25 years.

Based on these findings and as required by Condition III.E.4 of the license, Dow proposes the Cap Elevation Survey Plan described below.

¹ These survey point numbers refer only to the 2008 survey. They will be replaced by new point numbers for future surveys.

Cap Elevation Survey Plan

- Determine the current elevation of each survey point shown on attached Drawings B2-200-1374 and B2-201-1374. These drawings are titled NORTH CELLS #1 THRU #19 and SOUTH CELLS #38 THRU #43, respectively.
- The circled number for each survey point shown on these drawings coincides with the SURVEY POINT NUMBER listed on the attached spreadsheets. The new survey data will be entered into the spreadsheet column titled (DATE) SURVEY ELEV (DATE refers to the date of the survey). Macros are included in the spreadsheets that automatically determine changes in elevation (Δ ELEV column) for a specific point or changes in slope (Δ SLOPE column) between adjacent points.
- The changes in elevation and slope will be reviewed by Dow and a report showing all data will be submitted to the Michigan Department of Natural Resources and Environment (MDNRE). The MDNRE and Dow will agree on a path forward for any cap locations where there are indications of significant settlement as described below.
- The periodicity for the post closure surveys on closed cells will be as follows:
 - First survey of all currently capped cells at SLF, Cells #1 thru #19 & Cells #38 thru #43, will be performed in 2010, or the year that currently active Cells 20/22 is capped. The first survey will also include establishing survey points on the Cells 20/22 cap. The survey point locations for Cells 20/22, and all cells capped in the future, will be established and agreed upon prior to starting the cap survey;
 - The data from the first survey of the Cells #1 thru #19 & Cells #38 thru #43 caps will be compared against the original design elevations and slopes for these caps which are indicated in columns labeled "DESIGN ELEVATION" and "DESIGN SLOPE TO PREVIOUS POINT" on the spreadsheets. If the MDNRE and Dow agree the results of the first survey indicate settlement is not an issue, the second survey of all capped cells will be performed 3 years after the first. The majority of cap settlement for Cells 20/22, if any, should occur within this time frame;
 - If the MDNRE and Dow agree the results of the 3-year survey indicate settlement is not an issue, the subsequent survey of all capped cells will be performed 5 years after the second;
 - If the MDNRE and Dow agree the results of the 5-year survey indicate settlement is not an issue, periodic surveys will then be performed every 10 years after that;
 - If, at any time, evidence is found indicating that settlement has become an issue, the periodicity of the surveys may be discussed and agreed upon with the MDNRE.
- Surveys of future cells capped after Cells 20/22:
 - First survey will be the determination of the as-built elevations when the cap is constructed;
 - Second survey will be 3 years after the cap is constructed. The majority of cap settlement, if any, should occur within this time frame; and
 - If the MDNRE and Dow agree the results of the 3-year survey indicate settlement is not an issue, this cap will then be surveyed as part of the next 10-year site survey.
- Indicators that "significant" settlement may have occurred:
 - The elevation of a survey point changes by more than 0.5 feet in elevation between surveys;
 - A 30% flattening of the cap slopes, i.e., a 1% cap slope reduces to a 0.7% slope or a 2% cap slope reduces to a 1.4% slope; or
 - Significant ponding on the caps is noted during the post-rain event inspections.

SALZBURG LANDFILL CAP ELEVATION SURVEY

NORTH CELLS #1 THRU #19

(DATE) SURVEY vs DESIGN TOP OF CAP ELEVATION

SURVEY POINT NUMBERS ¹	EAST COORDINATE	SOUTH COORDINATE	DISTANCE TO PREVIOUS POINT (FEET)	(DATE) SURVEY ELEV (FEET)	DESIGN ELEV ² (FEET)	Δ ELEV ³ (FEET)	DESIGN SLOPE TO PREVIOUS POINT ⁴ (%)	CURRENT SLOPE TO PREVIOUS POINT (%)	Δ SLOPE (%)
1	E.6899	S.7114	N/A		638.1		N/A	N/A	N/A
2	E.6992	S.6982	162		640.0		1.2	N/A	
3	E.7085	S.6928	N/A		638.1		N/A	N/A	N/A
*2	E.6992	S.6982	107		640.0		1.8		
4	E.6826	S.7032	N/A		638.1		N/A	N/A	N/A
5	E.6926	S.6923	148		640.0		1.3		
6	E.6995	S.6847	N/A		638.1		N/A	N/A	N/A
*5	E.6926	S.6923	103		640.0		1.8		
7	E.6742	S.6978	N/A		638.1		N/A	N/A	N/A
8	E.6853	S.6860	162		640.0		1.2		
9	E.6930	S.6773	N/A		638.1		N/A	N/A	N/A
*8	E.6853	S.6860	115		640.0		1.6		
10	E.6712	S.6876	N/A		638.1		N/A	N/A	N/A
11	E.6783	S.6798	106		640.0		1.8		
12	E.6863	S.6711	N/A		638.4		N/A	N/A	N/A
*11	E.6783	S.6798	118		640.0		1.4		
13	E.6643	S.6799	N/A		638.1		N/A	N/A	N/A
14	E.6714	S.6737	94		640.0		2.0		
15	E.6807	S.6657	N/A		639.3		N/A	N/A	N/A
*14	E.6714	S.6737	122		640.0		0.6		
16	E.6749	S.6609	N/A		638.1		N/A	N/A	N/A
*15	E.6807	S.6657	75		639.3		1.6		
17	E.6924	S.6472	N/A		638.1		N/A	N/A	N/A
18	E.6924	S.6550	104		639.0		0.9		
19	E.6924	S.6654	104		640.0		1.0		
20	E.7027	S.6550	N/A		639.0		N/A	N/A	N/A
21	E.7027	S.6650	100		640.0		1.0		
22	E.7098	S.6550	N/A		639.0		N/A	N/A	N/A
23	E.7104	S.6650	100		640.0		1.0		
24	E.7106	S.6715	65		640.6		0.9		
25	E.7104	S.6802	87		640.1		0.6		
26	E.7183	S.6550	N/A		639.0		N/A	N/A	N/A
27	E.7175	S.6650	100		640.0		1.0		
28	E.7174	S.6740	90		640.9		1.0		
29	E.7177	S.6806	65		640.1		1.2		
30	E.7292	S.6550	N/A		639.0		N/A	N/A	N/A
31	E.7292	S.6650	100		640.0		1.0		
32	E.7106	S.6750	100		640.6		0.6		
33	E.7301	S.6850	100		641.4		0.8		
34	E.7381	S.6551	N/A		639.0		N/A	N/A	N/A
35	E.7377	S.6651	100		640.0		1.0		
36	E.7373	S.6751	100		640.9		0.9		
37	E.7369	S.6851	100		642.0		1.1		
38	E.7489	S.6553	N/A		639.0		N/A	N/A	N/A
39	E.7489	S.6653	100		640.0		1.0		
40	E.7489	S.6753	100		641.0		1.0		
41	E.7394	S.6853	100		642.0		1.0		
42	E.7494	S.6953	100		643.0		1.0		
43	E.7494	S.7003	50		644.0		2.0		
44	E.7575	S.6554	N/A		639.0		N/A	N/A	N/A
45	E.7571	S.6654	100		640.0		1.0		
46	E.7566	S.6754	100		641.0		1.0		

NOTES:

1. POINT NUMBERS are shown on Drawings B2-200-1374. Also an * indicates points that are duplicated in the table because the grade slopes away from that point in two directions.
2. DESIGN ELEVATION indicates the original design elevation for the surface of the topsoil layer at that point on the cap.
3. A negative number for Δ ELEV indicates the SURVEY elevation is lower than the PLAN elevation.
A positive number for Δ ELEV indicates the SURVEY elevation is higher than the PLAN elevation.
4. N/A in this column indicates a slope calculation between this point and the previous point is not applicable.

SALZBURG LANDFILL CAP ELEVATION SURVEY									
NORTH CELLS #1 THRU #19									
(DATE) SURVEY vs DESIGN TOP OF CAP ELEVATION									
SURVEY POINT NUMBERS ¹	EAST COORDINATE	SOUTH COORDINATE	DISTANCE TO PREVIOUS POINT (FEET)	(DATE) SURVEY ELEV (FEET)	DESIGN ELEV ² (FEET)	Δ ELEV ³ (FEET)	DESIGN SLOPE TO PREVIOUS POINT ⁴ (%)	CURRENT SLOPE TO PREVIOUS POINT (%)	Δ SLOPE (%)
47	E.7561	S.6854	100		642.0		1.0		
48	E.7556	S.6954	100		643.0		1.0		
49	E.7554	S.7004	50		644.0		2.0		
50	E.7699	S.6600	N/A		639.5		N/A	N/A	N/A
51	E.7699	S.6700	100		640.5		1.0		
52	E.7699	S.6800	100		641.5		1.0		
53	E.7699	S.6900	100		642.5		1.0		
54	E.7699	S.7000	100		643.5		1.0		
55	E.7699	S.7100	100		644.5		1.0		
56	E.7779	S.6600	N/A		639.5		N/A	N/A	N/A
57	E.7775	S.6700	100		640.5		1.0		
58	E.7771	S.6800	100		641.5		1.0		
59	E.7767	S.6900	100		642.5		1.0		
60	E.7763	S.7000	100		643.5		1.0		
61	E.7760	S.7100	100		644.5		1.0		
62	E.7912	S.6600	N/A		639.5		N/A	N/A	N/A
63	E.7912	S.6700	100		640.5		1.0		
64	E.7912	S.6800	100		641.5		1.0		
65	E.7912	S.6900	100		642.5		1.0		
66	E.7912	S.7000	100		643.5		1.0		
67	E.7912	S.7100	100		644.5		1.0		
68	E.8012	S.6600	N/A		639.5		N/A	N/A	N/A
69	E.8012	S.6700	100		640.5		1.0		
70	E.8012	S.6800	100		641.5		1.0		
71	E.8012	S.6900	100		642.5		1.0		
72	E.8012	S.7000	100		643.5		1.0		
73	E.8012	S.7100	100		644.5		1.0		
74	E.8117	S.6600	N/A		639.5		N/A	N/A	N/A
75	E.8116	S.6700	100		640.5		1.0		
76	E.8115	S.6800	100		641.5		1.0		
77	E.8112	S.6900	100		642.5		1.0		
78	E.8109	S.7000	100		643.5		1.0		
79	E.8106	S.7100	100		644.5		1.0		
80	E.6791	S.6999	N/A		638.1		N/A	N/A	N/A
81	E.6885	S.6888	146		640.0		1.3		
82	E.6956	S.6803	N/A		638.1		N/A	N/A	N/A
*81	E.6885	S.6888	110		640.0		1.7		
83	E.6816	S.6538	N/A		638.1		N/A	N/A	N/A
84	E.6861	S.6598	75		639.0		1.2		
85	E.6893	S.6682	91		639.0		0.0		
86	E.7064	S.6550	N/A		639.0		N/A	N/A	N/A
87	E.7064	S.6650	100		640.0		1.0		
88	E.7064	S.6700	50		640.5		1.0		
89	E.7231	S.6550	N/A		639.0		N/A	N/A	N/A
90	E.7231	S.6650	100		640.0		1.0		
91	E.7231	S.6747	97		641.0		1.0		
92	E.7231	S.6809	N/A		640.5		N/A	N/A	N/A
93	E.7435	S.6552	N/A		639.0		N/A	N/A	N/A
94	E.7435	S.6652	100		640.0		1.0		
95	E.7435	S.6752	100		641.0		1.0		
96	E.7435	S.6852	100		642.0		1.0		
97	E.7435	S.6952	100		643.0		1.0		

NOTES:

1. POINT NUMBERS are shown on Drawings B2-200-1374. Also an * indicates points that are duplicated in the table because the grade slopes away from that point in two directions.
2. DESIGN ELEVATION indicates the original design elevation for the surface of the topsoil layer at that point on the cap.
3. A negative number for Δ ELEV indicates the SURVEY elevation is lower than the PLAN elevation.
A positive number for Δ ELEV indicates the SURVEY elevation is higher than the PLAN elevation.
4. N/A in this column indicates a slope calculation between this point and the previous point is not applicable.

SALZBURG LANDFILL CAP ELEVATION SURVEY

NORTH CELLS #1 THRU #19

(DATE) SURVEY vs DESIGN TOP OF CAP ELEVATION

SURVEY POINT NUMBERS ¹	EAST COORDINATE	SOUTH COORDINATE	DISTANCE TO PREVIOUS POINT (FEET)	(DATE) SURVEY ELEV (FEET)	DESIGN ELEV ² (FEET)	Δ ELEV ³ (FEET)	DESIGN SLOPE TO PREVIOUS POINT ⁴ (%)	CURRENT SLOPE TO PREVIOUS POINT (%)	Δ SLOPE (%)
98	E.7631	S.6600	N/A		639.5		N/A	N/A	N/A
99	E.7631	S.6700	100		640.5		1.0		
100	E.7631	S.6800	100		641.5		1.0		
101	E.7631	S.6900	100		642.5		1.0		
102	E.7631	S.7000	100		643.5		1.0		
103	E.7631	S.7097	96		644.5		1.0		
104	E.7842	S.6600	N/A		639.5		N/A	N/A	N/A
105	E.7842	S.6700	100		640.5		1.0		
106	E.7842	S.6800	100		641.5		1.0		
107	E.7842	S.6900	100		642.5		1.0		
108	E.7842	S.7000	100		643.5		1.0		
109	E.7842	S.7100	100		644.5		1.0		

NOTES:

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- DESIGN ELEVATION indicates the original design elevation for the surface of the topsoil layer at that point on the cap.
- A negative number for Δ ELEV indicates the SURVEY elevation is lower than the PLAN elevation.
A positive number for Δ ELEV indicates the SURVEY elevation is higher than the PLAN elevation.
- N/A in this column indicates a slope calculation between this point and the previous point is not applicable.

SALZBURG LANDFILL CAP ELEVATION SURVEY

SOUTH CELLS #38 THRU #43

(DATE) SURVEY vs DESIGN ELEVATION

SURVEY POINT NUMBER ¹	EAST COORDINATE	SOUTH COORDINATE	DISTANCE TO PREVIOUS POINT (FEET)	(DATE) SURVEY ELEV (FEET)	DESIGN ELEV ² (FEET)	Δ ELEV ³ (FEET)	DESIGN SLOPE TO PREVIOUS POINT ⁴ (%)	CURRENT SLOPE TO PREVIOUS POINT (%)	Δ SLOPE (%)
1	E.7736	S.7964	N/A		636.1		N/A	N/A	N/A
2	E.7875	S.7823	191		638.0		1.0		
3	E.8015	S.7680	200		640.0		1.0		
4	E.8085	S.7609	100		642.0		2.0		
5	E.8156	S.7538	100		644.0		2.0		
6	E.8229	S.7470	100		646.0		2.0		
7	E.7833	S.7992	N/A		636.5		N/A	N/A	N/A
8	E.7936	S.7879	153		638.0		1.0		
9	E.8070	S.7731	200		640.0		1.0		
10	E.8138	S.7657	100		642.0		2.0		
11	E.8202	S.7581	100		644.0		2.0		
12	E.8264	S.7502	100		646.0		2.0		
13	E.7901	S.8112	N/A		636.1		N/A	N/A	N/A
14	E.8034	S.7968	195		638.0		1.0		
15	E.8167	S.7818	200		640.0		1.0		
16	E.8236	S.7747	100		642.0		2.0		
17	E.8306	S.7675	100		644.0		2.0		
18	E.8365	S.7618	82		645.6		1.9		
19	E.7968	S.8172	N/A		636.1		N/A	N/A	N/A
20	E.8100	S.8028	196		638.0		1.0		
21	E.8234	S.7880	200		640.0		1.0		
22	E.8302	S.7806	100		642.0		2.0		
23	E.8370	S.7733	100		644.0		2.0		
24	E.8410	S.7688	60		645.2		2.0		
25	E.8045	S.8243	N/A		636.1		N/A	N/A	N/A
26	E.8177	S.8098	196		638.0		1.0		
27	E.8311	S.7950	200		640.0		1.0		
28	E.8378	S.7876	100		642.0		2.0		
29	E.8467	S.7779	131		644.6		2.0		
30	E.8127	S.8318	N/A		636.1		N/A	N/A	N/A
31	E.8253	S.8167	197		638.0		1.0		
32	E.8381	S.8013	200		640.0		1.0		
33	E.8443	S.7934	100		642.0		2.0		
34	E.8513	S.7852	108		644.0		1.8		
35	E.8729	S.7563	N/A		642.0		N/A	N/A	N/A
36	E.8529	S.7563	200		644.0		1.0		
37	E.8429	S.7559	100		645.0		2.0		
38	E.8729	S.7634	N/A		642.0		N/A	N/A	N/A
39	E.8529	S.7634	200		644.0		1.0		
40	E.8429	S.7634	100		645.0		1.0		
41	E.8629	S.7732	N/A		643.0		N/A	N/A	N/A
42	E.8529	S.7732	100		644.0		1.0		
43	E.8437	S.7732	92		644.9		1.0		
44	E.7882	S.8028	N/A		636.5		N/A	N/A	N/A
45	E.7982	S.7921	147		638.0		1.0		
46	E.8118	S.7774	200		640.0		1.0		
47	E.8186	S.7701	100		642.0		2.0		
48	E.8254	S.7627	100		644.0		2.0		
49	E.8323	S.7551	103		646.1		2.0		

NOTES:

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A positive number for Δ ELEV indicates the SURVEY elevation is higher than the PLAN elevation.
4. N/A in this column indicates a slope calculation between this point and the previous point is not applicable.