

Appendix A

Landfill Inspection Forms and Survey Data

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ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

INSPECTOR: J. McLaughlin DATE: 7/28/11 TIME: 1430 REVIEWED BY: George Sgill
 TEMPERATURE: 89° F WEATHER CONDITIONS: D2 - cloudy REVIEW DATE: 7-28-11

SUBSIDENCE / CONSOLIDATION

REGION	EVIDENCE OF CRACKS?	EVIDENCE OF DEPRESSIONS?	EVIDENCE OF SINK HOLES?	EVIDENCE OF PONDING?	OTHER (DESCRIBE BELOW)
COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
BUTTRESS FILL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 1	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 4	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 7	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			

Settlement Plates – Inspect integrity. Intact? Yes No

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG
None

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

SLOPE STABILITY

REGION	EVIDENCE OF CRACKS?	EVIDENCE OF SEEPS?	EVIDENCE OF BLOCK OR CIRCULAR FAILURE?	OTHER (DESCRIBE BELOW)
COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
BUTTRESS FILL SIDESLOPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
WEST PERIMETER CHANNEL SIDESLOPES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST PERIMETER CHANNEL SIDESLOPES	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER SEEPS (IF PRESENT)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

See Attachment for details.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

SOIL COVER

REGION	EVIDENCE OF SOIL DEPOSITION OR EROSION?	EVIDENCE OF EROSION RILLS/GULLIES?	EVIDENCE OF BURROWING ANIMALS?	OTHER (DESCRIBE BELOW)
COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
BUTTRESS FILL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
BUTTRESS FILL SIDESLOPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

The quarterly vegetation inspection will be completed in August.

ORIGINAL LANDFILL - MONITORING AND MAINTENANCE PLAN INSPECTION FORM

VEGETATION

REGION	CONDITION OF GRASS	UNWANTED VEGETATION PRESENT*?	PERCENTAGE OF GRASS VERSUS BARE GROUND?	PERCENTAGE OF UNWANTED VEGETATION?
COVER- WEST		<input type="checkbox"/> Yes <input type="checkbox"/> No		
COVER - EAST		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 1		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 2		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 3		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 4		<input type="checkbox"/> Yes <input type="checkbox"/> No	Jan	
DIVERSION BERM 5		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 6		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 7		<input type="checkbox"/> Yes <input type="checkbox"/> No		
WEST PERIMETER CHANNEL		<input type="checkbox"/> Yes <input type="checkbox"/> No		
EAST PERIMETER CHANNEL		<input type="checkbox"/> Yes <input type="checkbox"/> No		
UPPER BUTTERESS FILL SIDESLOPE		<input type="checkbox"/> Yes <input type="checkbox"/> No		
LOWER BUTTRESS FILL SIDESLOPE		<input type="checkbox"/> Yes <input type="checkbox"/> No		

* Unwanted vegetation includes weeds and "woody vegetation." Woody vegetation within the OLF waste footprint shall be removed. Other locations shall be evaluated per Section 3.5.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

STORMWATER MANAGEMENT STRUCTURES

CHANNELS

STRUCTURE	EVIDENCE OF EXCESSIVE EROSION, GULLYING, SCOUR, OR UNDERMINING?	EVIDENCE OF SETTLEMENT/ SUBSIDENCE OR DEPRESSIONS?	EVIDENCE OF BREACHING OR BANK FAILURE?	EVIDENCE OF BURROWING ANIMALS?	EVIDENCE OF SEDIMENT BUILD-UP OR OTHER BLOCKAGE?
DIVERSION BERM 1	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 4	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 7	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
TEMPORARY CHECK DAMS*	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
WEST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
EAST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				

* Check dams may be removed after vegetation is established.

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM
STORMWATER MANAGEMENT STRUCTURES (CONTINUED)

OUTFALLS

CHECK EACH STRUCTURE FOR EXCESSIVE EROSION AND SEDIMENT DEPTH. IF SEDIMENT DEPTH IS COMPROMISING THE DESIGN CHARACTERISTICS, REMOVE SEDIMENT.

STRUCTURE	CONDITION / SEDIMENT DEPTH
DIVERSION BERM OUTFALL 1	<i>Good condition / Minimal Sediment</i> 
DIVERSION BERM OUTFALL 2	
DIVERSION BERM OUTFALL 3	
DIVERSION BERM OUTFALL 4	
DIVERSION BERM OUTFALL 5	
DIVERSION BERM OUTFALL 6	
DIVERSION BERM OUTFALL 7	
WEST PERIMETER CHANNEL OUTFALL	
EAST PERIMETER CHANNEL OUTFALL	
FRENCH DRAIN OUTFALL (SID)	

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

“RUN-ON” CONTROL

AREA	ADVERSELY AFFECTING OLF?	COMMENT:
NORTH OF THE ORIGINAL LANDFILL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
WEST OF THE WEST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
EAST OF THE EAST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
NORTH OF WOMAN CREEK	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

MAINTENANCE REQUIRED

None.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

INSTITUTIONAL CONTROLS

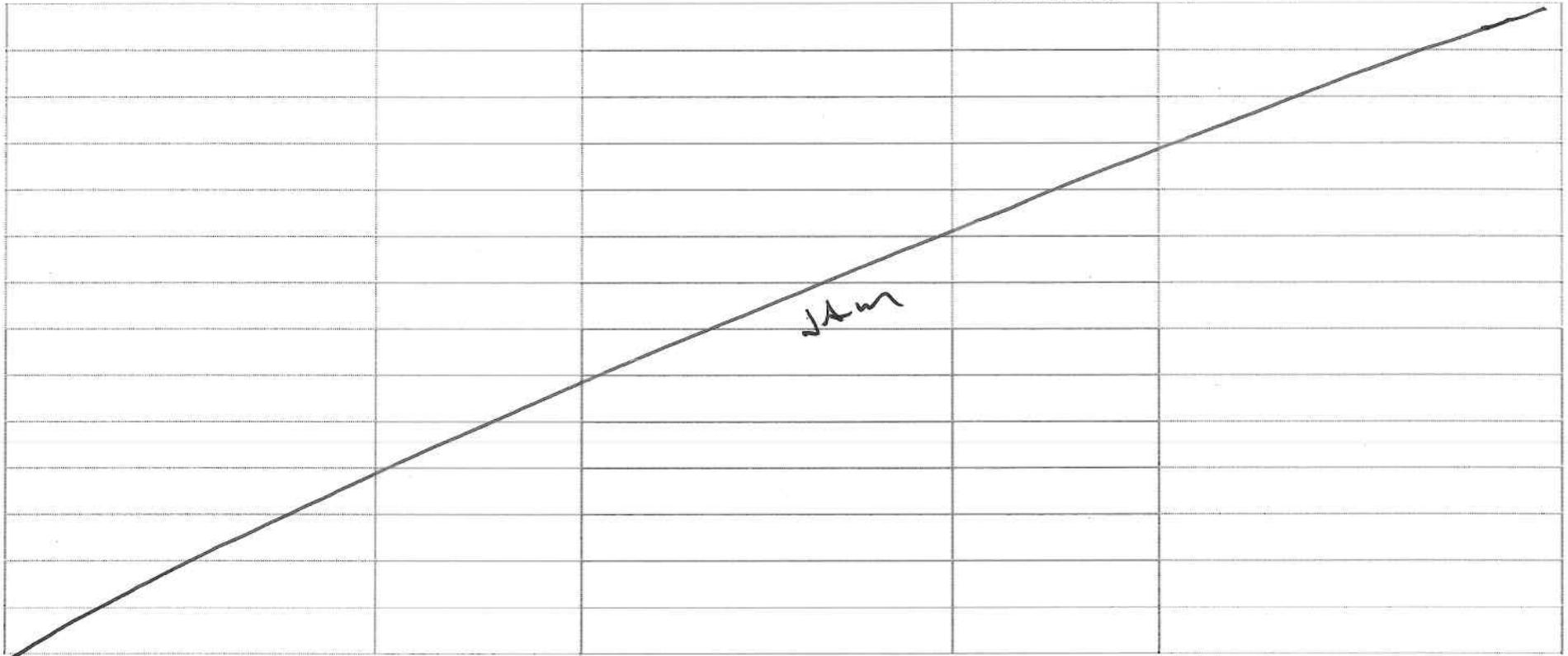
ITEM		
EVIDENCE OF EXCAVATION(S) OF COVER AND IMMEDIATE VICINITY OF COVER?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: <i>N/A</i>
EVIDENCE OF CONSTRUCTION OF ROADS, TRAILS, OR BUILDINGS ON COVER?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: <i>N/A</i>
EVIDENCE OF DRILLING OF WELLS OR USE OF GROUNDWATER?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: <i>N/A</i>
DAMAGE OR REMOVAL OF ANY SIGNAGE OR GROUNDWATER MONITORING WELLS?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: <i>N/A</i>

OTHER DEFICIENCIES / PHOTO LOG

None

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

ACTION ITEMS

DEFICIENCY	DATE NOTED	ACTION	DATE COMPLETED	COMMENTS
				

INSPECTOR SIGNATURE: *C. D. M. P.*

DATE: 7/28/11

REVIEWER SIGNATURE: *Greg Smith*

DATE: 7-28-11

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Original Landfill July 2011 Monthly Inspection—Attachment 1

The monthly inspection of the OLF was completed on July 28. The cover was dry at the time of the inspection except for the seep locations. The Rocky Flats Site received higher than average amounts of precipitation for the month of July with a total of 5.31 inches. A special inspection of the OLF cover was completed on July 7 following a precipitation event of 1.9 inches. No problems were observed. No new cracks were observed on the OLF cover. The slump in the EPC remained unchanged as well. Vegetation is well established on the majority of the cover, with only a few bare spots on berms 1 and 4.

The topographic laser survey of the OLF cover has been completed. Maintenance including berm height adjustments and installation of erosion controls will be completed in August.

Project Location Updates

Berms 1 and 7 appear stable and satisfactory, with no new slumping or cracking present.

The Western Perimeter Channel is still in good shape. The vegetation continues to reestablish well.



Berm 1



West Perimeter Channel

Seeps

The Seep 1 area was dry, as usual. The area around Seeps 2 and 3 was saturated and showed some surface expression. The area around Seeps 4 and 5 had some surface expression that was draining through the berm 3 drain as designed. The Seep 6 area has three locations above berm 7 that were saturated. The Seep 7 area was saturated and had a surface flow of about 1–2 gallons per minute (gpm) in the upper and lower sections; the flow was draining down berms 3 and 7. Surface flow at Seep 8 continues at a rate of approximately 2–3 gpm. Pictures of the main seep locations are included below. As can be seen in the pictures, wetland vegetation continues to be prominent in all of the active seep locations.



Seeps 2 and 3 Area



Seeps 4 and 5 Area



Seep 6 Area



Seep 7Area



Seep 8

EPC Slump

The slump that was observed on the eastern slope of the EPC toward the top of the channel remains unchanged. The wooden stakes that were installed around the perimeter of the slumping area have not moved. No vertical displacement is apparent. A small crack approximately 2' long was observed on the upper part of the slumping area. The crack was filled and compacted at the time of the inspection. We will continue to monitor the slumping area for any changes during routine and nonroutine inspections of the OLF.



EPC Slump Area

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

INSPECTOR: J. McLaughlin DATE: 8/21/11 TIME: 0900 REVIEWED BY: Chris Seybold
 TEMPERATURE: 75° F WEATHER CONDITIONS: Sunny REVIEW DATE: 9-6-11

SUBSIDENCE / CONSOLIDATION

REGION	EVIDENCE OF CRACKS?	EVIDENCE OF DEPRESSIONS?	EVIDENCE OF SINK HOLES?	EVIDENCE OF PONDING?	OTHER (DESCRIBE BELOW)
COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
BUTTRESS FILL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 1	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 4	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 7	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			

Settlement Plates – Inspect integrity. Intact? Yes No

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

SLOPE STABILITY

REGION	EVIDENCE OF CRACKS?	EVIDENCE OF SEEPS?	EVIDENCE OF BLOCK OR CIRCULAR FAILURE?	OTHER (DESCRIBE BELOW)
COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
BUTTRESS FILL SIDESLOPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
WEST PERIMETER CHANNEL SIDESLOPES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST PERIMETER CHANNEL SIDESLOPES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER SEEPS (IF PRESENT)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

See Attachment 1 For details.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

SOIL COVER

REGION	EVIDENCE OF SOIL DEPOSITION OR EROSION?	EVIDENCE OF EROSION RILLS/GULLIES?	EVIDENCE OF BURROWING ANIMALS?	OTHER (DESCRIBE BELOW)
COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
BUTTRESS FILL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
BUTTRESS FILL SIDESLOPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None

ORIGINAL LANDFILL - MONITORING AND MAINTENANCE PLAN INSPECTION FORM

OLF Vegetation Survey

Jody Nelson

8/2/11

VEGETATION

REGION	CONDITION OF GRASS	UNWANTED VEGETATION PRESENT**?	PERCENTAGE OF GRASS VERSUS BARE GROUND?	PERCENTAGE OF UNWANTED VEGETATION?
COVER - WEST	Space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5-100%	VETHI, SAEXI, SAAMI, PODEI, VEBLI, LIDAI, BRTEI, <1%
COVER - EAST	Space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10-100%	VETHI, SAAMI, SAEXI, ELANI, CEDII <1%
DIVERSION BERM 1	None to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0-95%	VETHI, ERCII, SOARI, <1%
DIVERSION BERM 2	Space to good	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5-95%	— 0
DIVERSION BERM 3	Space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5-100%	LIDAI, SAAMI, SAEXI, PODEI, ERCII, 2%
DIVERSION BERM 4	Space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5-75%	ERCII, CEDII, VETHI <1%
DIVERSION BERM 5	Space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5-90%	ERCII, VETHI, <1%
DIVERSION BERM 6	moderate to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	20-90%	ERCII, COARI, <1%
DIVERSION BERM 7	Space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5-85%	CEDII, LIDAI, VETHI, COARI, ERCII, SAAMI, <1%
WEST PERIMETER CHANNEL	Space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5-90%	CEDII, VETHI, <1%
EAST PERIMETER CHANNEL	Space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5-90%	VETHI, <1%
UPPER BUTTERESS FILL SIDESLOPE (flat)	Space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10-90%	LIDAI, VETHI, <1%
LOWER BUTTRESS FILL SIDESLOPE (steep)	space to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	15-90%	VETHI, LIDAI, BRTEI, <1%

* Unwanted vegetation includes weeds and "woody vegetation." Woody vegetation within the OLF waste footprint shall be removed. Other locations shall be evaluated per Section 3.5.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

Vegetation on the OLF is looking very good. It has filled in well over the past couple of years in most places.

Jody Nelson 8/2/11

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

STORMWATER MANAGEMENT STRUCTURES

CHANNELS

STRUCTURE	EVIDENCE OF EXCESSIVE EROSION, GULLYING, SCOUR, OR UNDERMINING?	EVIDENCE OF SETTLEMENT/ SUBSIDENCE OR DEPRESSIONS?	EVIDENCE OF BREACHING OR BANK FAILURE?	EVIDENCE OF BURROWING ANIMALS?	EVIDENCE OF SEDIMENT BUILD-UP OR OTHER BLOCKAGE?
DIVERSION BERM 1	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 4	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 7	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
TEMPORARY CHECK DAMS*	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
WEST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
EAST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				

* Check dams may be removed after vegetation is established.

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM
STORMWATER MANAGEMENT STRUCTURES (CONTINUED)

OUTFALLS

CHECK EACH STRUCTURE FOR EXCESSIVE EROSION AND SEDIMENT DEPTH. IF SEDIMENT DEPTH IS COMPROMISING THE DESIGN CHARACTERISTICS, REMOVE SEDIMENT.

STRUCTURE	CONDITION / SEDIMENT DEPTH
DIVERSION BERM OUTFALL 1	<i>Good condition / Minimal sediment</i>
DIVERSION BERM OUTFALL 2	
DIVERSION BERM OUTFALL 3	
DIVERSION BERM OUTFALL 4	
DIVERSION BERM OUTFALL 5	
DIVERSION BERM OUTFALL 6	
DIVERSION BERM OUTFALL 7	
WEST PERIMETER CHANNEL OUTFALL	
EAST PERIMETER CHANNEL OUTFALL	
FRENCH DRAIN OUTFALL (SID)	

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

“RUN-ON” CONTROL

AREA	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	ADVERSELY AFFECTING OLF?
NORTH OF THE ORIGINAL LANDFILL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: _____
WEST OF THE WEST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: _____
EAST OF THE EAST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: _____
NORTH OF WOMAN CREEK	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: _____

MAINTENANCE REQUIRED

None.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

INSTITUTIONAL CONTROLS

ITEM			
EVIDENCE OF EXCAVATION(S) OF COVER AND IMMEDIATE VICINITY OF COVER?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT: -
EVIDENCE OF CONSTRUCTION OF ROADS, TRAILS, OR BUILDINGS ON COVER?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT: -
EVIDENCE OF DRILLING OF WELLS OR USE OF GROUNDWATER?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT: -
DAMAGE OR REMOVAL OF ANY SIGNAGE OR GROUNDWATER MONITORING WELLS?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT: -

OTHER DEFICIENCIES / PHOTO LOG

None.

ORIGINAL LANDFILL - MONITORING AND MAINTENANCE PLAN INSPECTION FORM

ACTION ITEMS

DEFICIENCY	DATE NOTED	ACTION	DATE COMPLETED	COMMENTS
Berm heights need adjusted.	July 2011	Adjust berm heights	8/17/11	OLF Maintenance Project 2011
<i>JAM</i>				

INSPECTOR SIGNATURE: *[Signature]* DATE: 8/31/11
 REVIEWER SIGNATURE: *[Signature]* DATE: 9-6-11

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Original Landfill August 2011 Monthly Inspection—Attachment 1

The monthly inspection of the OLF was completed on August 31. The cover was dry at the time of the inspection except for the seep locations. The Rocky Flats Site received lower than average amounts of precipitation for the month of August with a total of 0.59 inches. No new cracks were observed on the OLF cover. The slump in the EPC remained unchanged as well. Vegetation is well established on the majority of the cover.

The OLF Maintenance 2011 Project was completed on August 16 and 17. The scope of the project included adjusting berm heights to the requirements established in the OLF Monitoring and Maintenance Plan and installing new erosion matting in the West Perimeter Channel. The berm areas that were disturbed during this project were re-seeded and had erosion matting applied to help hold the additional soil in place. Approximately 700 feet of berms had additional soil added during this project. Two locations in the West Perimeter Channel that previously had coconut matting applied were covered with new Turf Reinforcement Matting (TRM).

Seeps

The Seep 1 area was dry, as usual. The area around Seeps 2 and 3 were dry and showed no surface expression. The area around Seeps 4 and 5 had some surface expression that was draining through the berm 3 drain as designed. The Seep 6 area has three locations above berm 7 that were dry. The Seep 7 area was saturated and had a surface flow of about .5 gallons per minute (gpm) in the upper and lower sections; the flow was draining down berms 3 and 7. Surface flow at Seep 8 continues at a rate of approximately 1-2 gpm. The seep locations continue to support wetland vegetation even though drier conditions are present.

EPC Slump

The slump that was observed on the eastern slope of the EPC toward the top of the channel remains unchanged. The wooden stakes that were installed around the perimeter of the slumping area have not moved. No vertical displacement is apparent. A small crack approximately 2' long was observed on the upper part of the slumping area. The crack was filled and compacted at the time of the inspection. We will continue to monitor the slumping area for any changes during routine and nonroutine inspections of the OLF.

OLF Maintenance 2011 Project pictures:



Measuring Berm Heights



Adding Soil to Berms



Applying Erosion Matting to Berms



Completed Berm 1 Location



Installing Erosion Matting in West Perimeter Channel



Completed West Perimeter Channel

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ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

INSPECTOR: J. McLaughlin DATE: 9/20/11 TIME: 1300 REVIEWED BY: Jeff Squire
 TEMPERATURE: 78° F WEATHER CONDITIONS: Sunny REVIEW DATE: 9-29-11

SUBSIDENCE / CONSOLIDATION

REGION	EVIDENCE OF CRACKS?	EVIDENCE OF DEPRESSIONS?	EVIDENCE OF SINK HOLES?	EVIDENCE OF PONDING?	OTHER (DESCRIBE BELOW)
COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
BUTTRESS FILL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 1	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 4	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
DIVERSION BERM 7	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			

Settlement Plates – Inspect integrity. Intact? Yes No

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG
None.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

SLOPE STABILITY

REGION	EVIDENCE OF CRACKS?	EVIDENCE OF SEEPS?	EVIDENCE OF BLOCK OR CIRCULAR FAILURE?	OTHER (DESCRIBE BELOW)
COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
BUTTRESS FILL SIDESLOPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
WEST PERIMETER CHANNEL SIDESLOPES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST PERIMETER CHANNEL SIDESLOPES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER SEEPS (IF PRESENT)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

SOIL COVER

REGION	EVIDENCE OF SOIL DEPOSITION OR EROSION?	EVIDENCE OF EROSION RILLS/GULLIES?	EVIDENCE OF BURROWING ANIMALS?	OTHER (DESCRIBE BELOW)
COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
BUTTRESS FILL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
BUTTRESS FILL SIDESLOPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

Quarterly vegetation inspection was completed in August.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

VEGETATION

REGION	CONDITION OF GRASS	UNWANTED VEGETATION PRESENT*?	PERCENTAGE OF GRASS VERSUS BARE GROUND?	PERCENTAGE OF UNWANTED VEGETATION?
COVER- WEST		<input type="checkbox"/> Yes <input type="checkbox"/> No		
COVER - EAST		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 1		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 2		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 3		<input type="checkbox"/> Yes <input type="checkbox"/> No	JAW	
DIVERSION BERM 4		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
DIVERSION BERM 5		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 6		<input type="checkbox"/> Yes <input type="checkbox"/> No		
DIVERSION BERM 7		<input type="checkbox"/> Yes <input type="checkbox"/> No		
WEST PERIMETER CHANNEL		<input type="checkbox"/> Yes <input type="checkbox"/> No		
EAST PERIMETER CHANNEL		<input type="checkbox"/> Yes <input type="checkbox"/> No		
UPPER BUTTERESS FILL SIDESLOPE		<input type="checkbox"/> Yes <input type="checkbox"/> No		
LOWER BUTTRESS FILL SIDESLOPE		<input type="checkbox"/> Yes <input type="checkbox"/> No		

* Unwanted vegetation includes weeds and "woody vegetation." Woody vegetation within the OLF waste footprint shall be removed. Other locations shall be evaluated per Section 3.5.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

STORMWATER MANAGEMENT STRUCTURES

CHANNELS

STRUCTURE	EVIDENCE OF EXCESSIVE EROSION, GULLYING, SCOUR, OR UNDERMINING?	EVIDENCE OF SETTLEMENT/ SUBSIDENCE OR DEPRESSIONS?	EVIDENCE OF BREACHING OR BANK FAILURE?	EVIDENCE OF BURROWING ANIMALS?	EVIDENCE OF SEDIMENT BUILD-UP OR OTHER BLOCKAGE?
DIVERSION BERM 1	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 4	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
DIVERSION BERM 7	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
TEMPORARY CHECK DAMS*	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
WEST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
EAST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				

* Check dams may be removed after vegetation is established.

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

All maintenance activities were completed during the OLF Maintenance Project.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM
STORMWATER MANAGEMENT STRUCTURES (CONTINUED)

OUTFALLS

CHECK EACH STRUCTURE FOR EXCESSIVE EROSION AND SEDIMENT DEPTH. IF SEDIMENT DEPTH IS COMPROMISING THE DESIGN CHARACTERISTICS, REMOVE SEDIMENT.

STRUCTURE	CONDITION / SEDIMENT DEPTH
DIVERSION BERM OUTFALL 1	<i>Good Condition / No sediment in outfalls</i>
DIVERSION BERM OUTFALL 2	
DIVERSION BERM OUTFALL 3	
DIVERSION BERM OUTFALL 4	
DIVERSION BERM OUTFALL 5	
DIVERSION BERM OUTFALL 6	
DIVERSION BERM OUTFALL 7	
WEST PERIMETER CHANNEL OUTFALL	
EAST PERIMETER CHANNEL OUTFALL	
FRENCH DRAIN OUTFALL (SID)	

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

“RUN-ON” CONTROL

AREA	ADVERSELY AFFECTING OLF?	COMMENT:
NORTH OF THE ORIGINAL LANDFILL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	—
WEST OF THE WEST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	—
EAST OF THE EAST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	—
NORTH OF WOMAN CREEK	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	—

MAINTENANCE REQUIRED

None.

ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

INSTITUTIONAL CONTROLS

ITEM				
EVIDENCE OF EXCAVATION(S) OF COVER AND IMMEDIATE VICINITY OF COVER?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:	-
EVIDENCE OF CONSTRUCTION OF ROADS, TRAILS, OR BUILDINGS ON COVER?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:	-
EVIDENCE OF DRILLING OF WELLS OR USE OF GROUNDWATER?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:	-
DAMAGE OR REMOVAL OF ANY SIGNAGE OR GROUNDWATER MONITORING WELLS?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:	-

OTHER DEFICIENCIES / PHOTO LOG

None.

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Original Landfill September 2011 Monthly Inspection—Attachment 1

The monthly inspection of the OLF was completed on September 20. The cover was dry at the time of the inspection except for the seep locations. The Rocky Flats Site received average amounts of precipitation for the month of August with a total of 2.4 inches. No new cracks were observed on the OLF cover. The slump in the EPC remained unchanged as well. Vegetation is well established on the majority of the cover.

Special inspections of the OLF cover were completed on September 8 and 15 due to the site receiving precipitation events of 1.1 and 1.24 inches. Berm locations that were re-graded during the OLF Maintenance 2011 Project remained in good condition. A small section of the newly installed erosion matting in the West Perimeter Channel needed to be re-staked following the precipitation event on September 14. No other repairs were needed.

Project Areas



Berm 1



End of Berm 7



West Perimeter Channel

Seeps

The Seep 1 area was dry, as usual. The area around Seeps 2 and 3 were dry and showed no surface expression. The area around Seeps 4 and 5 had some surface expression that was draining through the berm 3 drain as designed. The Seep 6 area has three locations above berm 7 that were dry. The Seep7 area was saturated, but had no surface flow. Surface flow at Seep 8 continues at a rate of approximately 1-2 gpm. The seep locations continue to support wetland vegetation even though drier conditions are present.



Seep 7

EPC Slump

The slump that was observed on the eastern slope of the EPC toward the top of the channel remains unchanged. The wooden stakes that were installed around the perimeter of the slumping area have not moved. No vertical displacement is apparent. We will continue to monitor the slumping area for any changes during routine and nonroutine inspections of the OLF.



Settlement Monument on OLF Cover

PRESENT LANDFILL – MONITORING AND MAINTENANCE PROGRAM

INSPECTION FORM

INSPECTOR: J. McLaughlin DATE: 8/30/11 TIME: 1000 REVIEWED BY: Greg Squitt
 TEMPERATURE: 80° F WEATHER CONDITIONS: Sunny REVIEW DATE: 9-6-11
 METEOROLOGICAL STATION LOCATION: NREL Wind Site

SUBSIDENCE/CONSOLIDATION

REGION	EVIDENCE OF CRACKS?	EVIDENCE OF DEPRESSIONS?	EVIDENCE OF SINK HOLES?	EVIDENCE OF PONDING?	OTHER (DESCRIBE BELOW)
TOP OF COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
TOP OF COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
COVER SIDESLOPE – NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
COVER SIDESLOPE – SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
EAST FACE SLOPE – NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
EAST FACE SLOPE – SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
EAST FACE SLOPE – CENTRAL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			
EAST FACE SLOPE – NORTH SEEP*	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-			

Settlement Plates and side-slope monitoring points to be inspected for integrity. During Year 1, they will be surveyed quarterly, and annually thereafter

Integrity intact?
 Yes No

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

None.

* AREA OF SEEP IS OUTSIDE OF LANDFILL COVER AND EAST OF THE COVER ANCHOR TRENCH

SLOPE STABILITY

REGION	EVIDENCE OF CRACKS?	EVIDENCE OF BLOCK OR CIRCULAR FAILURE?	EVIDENCE OF SEEPS?	OTHER (DESCRIBE BELOW)
COVER SIDESLOPE – NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER SIDESLOPE – SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
PERIMETER CHANNEL OUTER SLOPE – NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
PERIMETER CHANNEL OUTER SLOPE – SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST FACE SLOPE – NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST FACE SLOPE – SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST FACE SLOPE – CENTRAL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST FACE SLOPE – NORTH SEEP*	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

None. The "North Seep" location is dry and has good vegetative cover.

* AREA OF SEEP IS OUTSIDE OF LANDFILL COVER AND EAST OF THE COVER ANCHOR TRENCH

SOIL COVER

REGION	EVIDENCE OF SOIL DEPOSITION OR EROSION?	EVIDENCE OF EROSION RILLS/GULLIES?	EVIDENCE OF BURROWING ANIMALS?	OTHER (DESCRIBE BELOW)
TOP OF COVER – WEST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
TOP OF COVER – EAST	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER SIDESLOPE – NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
COVER SIDESLOPE – SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST FACE SLOPE – NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST FACE SLOPE – SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
EAST FACE SLOPE – CENTRAL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
AREA WHERE EAST SLOPE CENTRAL MEETS EAST SLOPE NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
AREA WHERE EAST SLOPE CENTRAL MEETS EAST SLOPE SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
	VENT CAPS IN PLACE & SECURE?	STANDPIPES IN GOOD CONDITION?	BIRDS OR INSECTS IN VENT CAPS?	
COVER – BAROMETRIC VENTS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

None.

PLF Vegetation Survey
 Jody Nelson 8/2/11

VEGETATION

REGION	CONDITION OF GRASS	UNWANTED VEGETATION PRESENT*?	OTHER (DESCRIBE BELOW)	
TOP OF COVER - WEST	good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	VETHI, CEDII, LIDAI, HYPEI, BRTEI,	<1%
TOP OF COVER - EAST	moderate to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	VETHI, CEDII, VEBLI, VETHI, ULPII, LIDAI,	<1%
EAST FACE SLOPE - NORTH	moderate to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	CEDII, CIARI, HYPEI, VETHI, COARI,	<1%
EAST FACE SLOPE - SOUTH	Sparsely to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	CIARI, HYPEI, VETHI, SAEKI, ULPII,	<1%
EAST FACE SLOPE - CENTRAL	moderate Sparsely to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	SAEKI, HYPEI, CIARI, SAAMI, CEDII, VETHI,	<1%
COVER SIDESLOPE - NORTH	moderate to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	CEDII, VETHI, CIARI, COARI, HYPEI,	<1%
COVER SIDESLOPE - SOUTH	moderate to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	BRTEI, CEDII, VETHI, COARI, HYPEI, LIDAI,	1%
VEGETATION-LINED PERIMETER CHANNEL - NORTH	moderate to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	CEDII,	<1%
VEGETATION-LINED PERIMETER CHANNEL - SOUTH	Sparsely to good	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	CEDII, VETHI,	<1%

* Unwanted vegetation includes weeds and deep-rooting trees.

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

Overall vegetation is looking good.

JKN 8/2/11

SEEP TREATMENT SYSTEM

REGION	EVIDENCE OF PLUGGING, OBSTRUCTIONS, OR EXCESS DEBRIS?	EVIDENCE OF CRACKS OR DETERIORATION?	OTHER (DESCRIBE BELOW)
GWIS INLET PIPES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
STRIP DRAIN INLET PIPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
NORTH MANHOLE OUTLET PIPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
SOUTH MANHOLE OUTLET PIPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
TREATMENT UNIT	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
TREATMENT UNIT OUTLET PIPE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
NORTH MANHOLE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
SOUTH MANHOLE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-
TREATMENT UNIT GRATING	NA	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

None.

STORMWATER MANAGEMENT STRUCTURES

CHANNELS/LINING

STRUCTURE	EVIDENCE OF EXCESSIVE EROSION, GULLYING, SCOUR, OR UNDERMINING?	EVIDENCE OF SETTLEMENT/ SUBSIDENCE OR DEPRESSIONS?	EVIDENCE OF BREACHING OR BANK FAILURE?	EVIDENCE OF BURROWING ANIMALS?	EVIDENCE OF SEDIMENT BUILD-UP OR OTHER BLOCKAGE?	EVIDENCE OF LINING DETERIORATION, HOLES, RIPS, OR SEPARATION?	EVIDENCE OF LINING DISPLACEMENT?
DIVERSION BERM	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
VEGETATION-LINED PERIMETER CHANNEL - NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
VEGETATION-LINED PERIMETER CHANNEL - SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
RIPRAP-LINED PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
C350-LINED EAST FACE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
EAST FACE RIPRAP CHANNEL - NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
EAST FACE RIPRAP CHANNEL - SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

Channels all have good stands of vegetation.

STORMWATER MANAGEMENT STRUCTURES (CONTINUED)

OUTFALLS

CHECK EACH STRUCTURE FOR EXCESSIVE EROSION AND SEDIMENT DEPTH. IF SEDIMENT DEPTH IS COMPROMISING THE DESIGN CHARACTERISTICS, REMOVE SEDIMENT.

STRUCTURE	CONDITION/SEDIMENT DEPTH
DIVERSION BERM OUTFALL - NORTH	Good condition / Minimal sediment
DIVERSION BERM OUTFALL - SOUTH	
CULVERT 1 OUTFALL	
CULVERT 2 OUTFALL	
SOUTHWEST CULVERT OUTFALL	

CULVERTS

CHECK EACH STRUCTURE FOR BLOCKAGE, SURROUNDING CONDITIONS, BREACHING, SEDIMENT BUILD-UP, AND INLET/OUTLET CONDITIONS.

STRUCTURE	CONDITION
CULVERT 1	Good condition / minimal sediment
CULVERT 2	
SOUTHWEST CULVERT	↓

MAINTENANCE REQUIRED/PHOTO LOG

None.

"RUN-ON" EROSION CONTROL

AREA	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	ADVERSELY AFFECTING PLF?
RUN-ON INTO PERIMETER CHANNEL – NORTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: —
RUN-ON INTO PERIMETER CHANNEL – SOUTH	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: —
NATURAL DRAINAGE FED BY CULVERT 1	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: —
NATURAL DRAINAGE FED BY NORTHEAST PERIMETER CHANNEL	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: —
NATURAL DRAINAGE FED BY RIPRAP	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	COMMENT: —

MAINTENANCE REQUIRED/PHOTO LOG

None

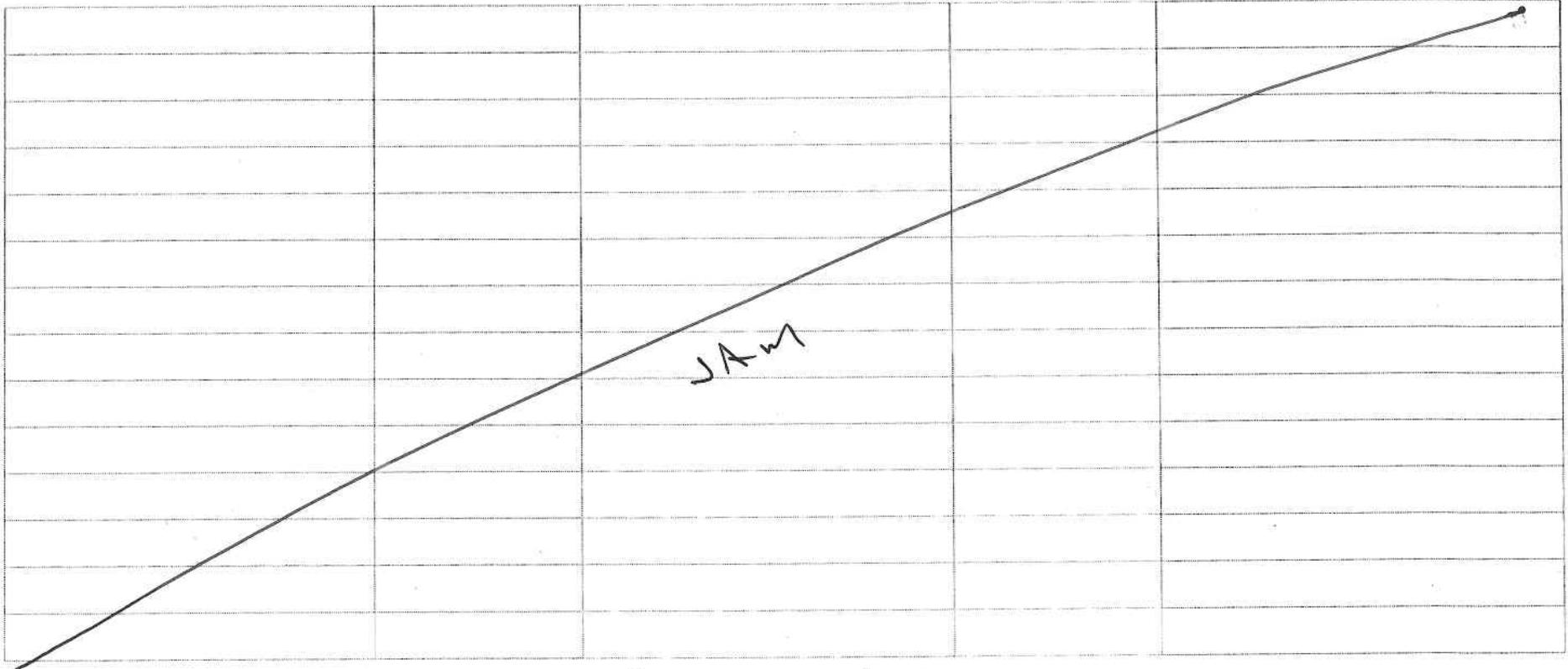
INSTITUTIONAL CONTROLS

ITEM			
EVIDENCE OF EXCAVATION(S) OF COVER AND IMMEDIATE VICINITY OF COVER?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:
EVIDENCE OF CONSTRUCTION OF ROADS OR TRAILS ON COVER OR BUILDINGS?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:
EVIDENCE OF UNAUTHORIZED ENTRY?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:
EVIDENCE OF DRILLING OF WELLS OR USE OF GROUNDWATER?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:
DISRUPTION OR DAMAGE OF SEEP TREATMENT SYSTEM?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:
DAMAGE OR REMOVAL OF ANY SIGNAGE OR GROUNDWATER MONITORING WELLS?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	COMMENT:

OTHER DEFICIENCIES/PHOTO LOG

None.

ACTION ITEMS

DEFICIENCY	DATE NOTED	ACTION	DATE COMPLETED	COMMENTS
 <p>JAM</p>				

INSPECTOR SIGNATURE: *[Signature]* DATE: 8/30/11
REVIEWER SIGNATURE: *[Signature]* DATE: 9-6-11

Rocky Flats Site

Original Landfill - Settlement Plates Monitoring

Quarterly Survey September 8, 2011 Comparison to Base Survey June 21, 2007

09-08-11 OBSERVATIONS

POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
62000	747913.69	2082233.10	6005.89	N RIM PIPE AA
62001	747644.92	2081851.20	5975.30	N RIM PIPE BB
62014	747883.30	2081666.06	6019.60	N RIM PIPE CC
62005	747803.43	2081642.35	6006.10	N RIM PIPE DD
62003	747700.74	2081620.53	5988.53	N RIM PIPE EE
62008	747704.39	2081406.94	5997.18	N RIM PIPE FF
62002	747563.08	2081656.31	5974.20	N RIM PIPE GG
62010	747741.57	2081226.22	6013.18	N RIM PIPE HH

**DELTA DELTA DELTA
NORTHING EASTING ELEVATION**

06-21-07 OBSERVATIONS

POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
70002	747913.66	2082233.05	6005.96	PIPE AA N.RIM
70003	747644.94	2081851.12	5975.42	PIPE BB N.RIM
70004	747883.49	2081666.09	6019.63	PIPE CC N.RIM
70005	747803.55	2081642.29	6006.14	PIPE DD N.RIM
70006	747700.87	2081620.46	5988.53	PIPE EE N.RIM (NO LID)
70007	747704.74	2081406.69	5997.20	PIPE FF N.RIM

PIPE GG OBSERVED FOR THE FIRST TIME ON 08-21-07 (NO COMPARISON TO BASE)

PIPE HH OBSERVED FOR THE FIRST TIME ON 12-16-08 (NO COMPARISON TO BASE)

DELTAS ARE CALCULATED AS THE DIFFERENCE BETWEEN THE 06-21-07 OBSERVATION AND THE 09-08-11 OBSERVATIOI

POINTS ARE GRID BASED COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NAD 27, NGVD 29

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Technical Memorandum

To:	Mr. Rick DiSalvo	From:	Thomas A. Chapel, CPG, PE
Company:	S.M. Stoller Corporation	Date:	September 28, 2011
Re:	Rocky Flats OLF Topographic Survey Review	Project #:	114-181750
CC:			

This memorandum summarizes opinions regarding as built drawings that were reviewed in order to provide recommendations to S.M. Stoller for topographic adjustments to stormwater berm heights and flow paths within the berm channels at the Rocky Flats Original Landfill. The As-Built drawings were titled ***OLF Topo Berm Height Adjustments Exhibit***, and included 8 sheets documenting conditions for Berms 1 through 7. The drawings were dated 6/15/11.

The review was performed for S.M. Stoller Corporation as part of their DOE contract No. DE-AM01-07LM00060 for the U.S. Department of Energy Office of Legacy Management, Grand Junction, Colorado.

Berm Grading Observations.

Each of the berm profiles was examined to determine if areas of concern from a geotechnical perspective were apparent from the survey data. Of primary concern are areas where "flat spots" occur. In general it would be preferable to change the grade in these areas by excavating slightly where possible to increase the grade rather than by filling in low spots. Since a minimum cover thickness must be maintained and a minimum berm height must also be maintained, it may not be possible to excavate into the cover in some areas, however. Areas where established grass stands or wetland species have developed may also preclude disturbance, and these areas likely reduce the effects of moisture in the soils. The goal of adjustments made to the berms and/or channels should be to reduce as much as possible the areas where water flow slows, allowing increased infiltration into the subsurface.

Following is a list of areas where minor re-grading could be used to reduce infiltration of surface water from the berm channels. However, the list does not account for the areas described above where extenuating circumstances suggest that adjustments should not be made. The stationing refers to the As-Built drawings referenced above.

- Berm 1: decreasing the elev. of the invert at STA 11+38, 12+17, 13+35, 13+61, and 14+19;

- Berm 2: in this case it appears that increasing the elevation of the invert and crown at STA 12+97 would be effective in maintaining flow. STA 14+52 needs to be lowered; 14+90 could be raised slightly;
- Berm 4: raise the low spot at 10+06; lower the high spot at 10+52; regrade from 10+92 to 12+71 to form a consistent grade; raise 14+35; lower 15 +54 and 16+33, 17+16, and 17+90;
- Berm 5: remove "hump at 11+29 and regrade to approx. 12+35;
- Berm 6: regrade 12+28 to 13+30; lower 14+18 and 14+49; lower 16+15, 16+73, and 17+66;
- Berm 7: regrade 10+66 to 12+01; lower 13+60; regrade 15+60 to 16+41.

This list can be compared with areas "on the ground" to determine which segments, if any, can be targeted for additional grading.

Additional Recommendations.

During a site visit by S.M. Stoller and Tetra Tech in August, 2010, cracking of the ground surface was noted in a localized area. Four curvilinear cracks of varying lengths were observed upslope from the area where Berm 4 outfalls into the East Outfall Channel. These cracks generally followed the shape and alignment of the "headwall" that forms the beginning of the East Outfall channel. One crack was observed near the eastern slope "break" and was approximately 15 feet long. Due north of the slope break was a second crack approximately similar in dimension. Approximately 20 feet north, a more apparent crack was visible that extended from the edge of Berm 4 northeasterly and easterly approximately 100 feet. A fourth crack was observed at the edge of Berm 4 approximately 20 feet up-slope from the third crack. It should be noted that the crack dimensions are estimates made from field observations and sketched on the drawings. Measurements of the crack dimensions were not made. These cracks, based solely on their proximity and similarity in shape appear to be related to the abrupt slope change that occurs at the beginning of the East Outfall Channel.

We recommended that the cracks be monitored to look for evidence that they are expanding, and that the ground surface should be filled/tamped in a manner similar to that used on the area to the west where cracking has been observed. We understand that this process has been implemented and that no significant additional movement has been observed by S.M. Stoller. Therefore we believe this to be a reasonable approach to address future occurrences of minor cracking in this area. The repair methodology is consistent with the conclusions and recommendations in Tetra Tech's geotechnical investigation report dated June 4, 2008; and with the recommendations described in our Technical Memorandum dated August 10, 2010.

Original Landfill Berm Maintenance performed August 16 and 17, 2011

Berm Number	Location - Easting Coordinates (Note 1)	Work Performed (Note 2)
Berm 1	2080958 to 2081198	Added soil to top of approximately 240' length of berm
	2081329 to 2081359	Added soil to top of approximately 30' length of berm
Berm 2	2081361 to 2081431	Added soil to top of approximately 70' length of berm
	2081511 to 2081556	Added soil to top of approximately 50' length of berm
Berm 3	2081210 to 2081225	Added soil to top of approximately 15' length of berm
	2081436	Filled low spot in approximately 3' length of berm channel
	2081575 to 2081589	Filled low spot in approximately 15' length of berm channel
	2081549 to 2081589	Added soil to top of approximately 40' length of berm
Berm 4	2081862	Added soil to top of approximately 3' length of berm
	2081982	Added soil to top of approximately 3' length of berm
	2082120 to 2082162	Added soil to top of approximately 50' length of berm
	2082226 to 2082252	Added soil to top of approximately 30' length of berm
Berm 5	2081768 to 2081798	Added soil to top of approximately 30' length of berm
	2082273 to 2082292	Added soil to top of approximately 30' length of berm
	2081701 to 2081725	Graded to lower high spots in approximately 25' length of berm channel
Berm 6	2082308 to 2082388	Added soil to top of approximately 90' length of berm
	2082418 to 2082442	Added soil to top of approximately 30' length of berm
	2082521 to 2082565	Added soil to top of approximately 45' length of berm
Berm 7	2081708 to 2081738	Added soil to top of approximately 30' length of berm
	2081783 to 2081828	Graded to lower high spots in approximately 40' length of berm channel
	2082048 to 2082096	Added soil to top of approximately 50' length of berm

Note 1 – NAD-1927 State Plane Coordinates, Colorado Central

Note 2 – Berm channels met average slope requirements before grading to remove high spots, per topographic survey as follows:

Average Berm Channel Slope

Berm 1	2.87 %
Berm 2	4.37 %
Berm 3	3.81 %
Berm 4	3.87 %
Berm 5	2.06%
Berm 6	2.23%
Berm7	2.68%

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