

APPENDIX A

SITE INSPECTION FORMS

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION			
Site name: <u>DP-13</u>	Date of inspection: <u>10-5-05*</u>		
Location and Region: <u>Lake AFB A2 (9)</u>	EPA ID: <u>AZ0570024133</u>		
Agency, office, or company leading the five-year review: <u>Lake AFB</u>	Weather/temperature:		
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____ </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls </td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls
<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls		
Attachments: Inspection team roster attached	Site map attached		
II. INTERVIEWS (Check all that apply)			
1. O&M site manager <u>Alan Thomas P.E.</u> <u>Restoration PM</u> <u>10-12-06</u>			
Name	Title		
Interviewed at site at office <u>by phone</u> Phone no. <u>423-856-3621</u>	Date		
Problems, suggestions; Report attached _____			
2. O&M staff <u>N/A</u>			
Name	Title		
Interviewed at site at office by phone Phone no. _____	Date		
Problems, suggestions; Report attached _____			

* Surveyed during installation of fiber optic cable

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u>
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	<u>N/A</u>
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u> <u>N/A</u>
5.	Gas Generation Records Remarks _____	Readily available	Up to date	<u>N/A</u>
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	<u>N/A</u>
7.	Groundwater Monitoring Records Remarks _____	Readily available	Up to date	<u>N/A</u>
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	<u>N/A</u>
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	<u>N/A</u>

IV. O&M COSTS

1. O&M Organization

State in-house Contractor for State
 PRP in-house Contractor for PRP
 Federal Facility in-house Contractor for Federal Facility
 Other _____

2. O&M Cost Records

Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. Fencing damaged Location shown on site map Gates secured N/A
 Remarks _____

B. Other Access Restrictions

1. Signs and other security measures Location shown on site map N/A
 Remarks Site is within fenced AFIS
with controlled access

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) _____

Frequency when construction may occur

Responsible party/agency CDL RTB

Contact Alan Thomas

Name Title Date Phone no.

Reporting is up-to-date Yes No N/A

Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A

Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

2. **Adequacy** ICs are adequate ICs are inadequate N/A

Remarks _____

D. General

1. **Vandalism/trespassing** Location shown on site map No vandalism evident
 Remarks _____

2. **Land use changes on site** N/A
 Remarks No

3. **Land use changes off site** N/A
 Remarks No

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map Roads adequate N/A
 Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A**A. Landfill Surface**

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
 Soft subgrade Location shown on site map Areal extent _____
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u>				
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u>				
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	No evidence of undercutting
5.	Obstructions Location shown on site map _____ Size _____ Remarks _____	Type _____	No obstructions Areal extent _____
6.	Excessive Vegetative Growth No evidence of excessive growth Vegetation in channels does not obstruct flow Location shown on site map _____ Remarks _____	Type _____	Areal extent _____
D. Cover Penetrations Applicable <u>N/A</u>			
1.	Gas Vents Properly secured/locked _____ Evidence of leakage at penetration _____ N/A Remarks _____	Active <u>Passive</u> Functioning	Routinely sampled Good condition Needs Maintenance
2.	Gas Monitoring Probes Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
3.	Monitoring Wells (within surface area of landfill) Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
4.	Leachate Extraction Wells Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
5.	Settlement Monuments Remarks _____	Located	Routinely surveyed N/A

E. Gas Collection and Treatment		Applicable	<u>N/A</u>
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____		
F. Cover Drainage Layer		Applicable	<u>N/A</u>
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Functioning N/A Remarks _____		
4.	Dam Functioning N/A Remarks _____		

H. Retaining Walls		Applicable	N/A
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	N/A
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	N/A
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching _____

IX. GROUNDWATER/SURFACE WATER REMEDIES				Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines				Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical	Good condition	All required wells properly operating	Needs Maintenance	N/A
	Remarks	_____			

2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances	Good condition	Needs Maintenance		
	Remarks	_____			

3.	Spare Parts and Equipment	Readily available	Good condition	Requires upgrade	Needs to be provided
	Remarks	_____			

B. Surface Water Collection Structures, Pumps, and Pipelines				Applicable	N/A
1.	Collection Structures, Pumps, and Electrical	Good condition	Needs Maintenance		
	Remarks	_____			

2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances	Good condition	Needs Maintenance		
	Remarks	_____			

3.	Spare Parts and Equipment	Readily available	Good condition	Requires upgrade	Needs to be provided
	Remarks	_____			

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply) Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels N/A Good condition Proper secondary containment Needs Maintenance Remarks _____		
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks _____		
5.	Treatment Building(s) N/A Good condition (esp. roof and doorways) Needs repair Chemicals and equipment properly stored Remarks _____		
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked Functioning Routinely sampled Good condition All required wells located Needs Maintenance N/A Remarks _____		
D. Monitoring Data			
1.	Monitoring Data		
	Is routinely submitted on time		Is of acceptable quality
2.	Monitoring data suggests:		
	Groundwater plume is effectively contained		Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
Properly secured/locked Functioning Routinely sampled Good condition
All required wells located Needs Maintenance N/A
Remarks _____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

VE MUR in place to minimize potential for contact and restrict future development.

ICs are effective

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION													
Site name: <u>DA-23</u>	Date of inspection: <u>8-22-04</u>												
Location and Region: <u>WheAFB AZ (9)</u>	EPA ID: <u>AZ-0570024133</u>												
Agency, office, or company leading the five-year review: <u>WheAFB</u>	Weather/temperature:												
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Landfill cover/containment</td> <td style="width: 50%;">Monitored natural attenuation</td> </tr> <tr> <td>Access controls</td> <td>Groundwater containment</td> </tr> <tr> <td><u>Institutional controls</u></td> <td>Vertical barrier walls</td> </tr> <tr> <td>Groundwater pump and treatment</td> <td></td> </tr> <tr> <td>Surface water collection and treatment</td> <td></td> </tr> <tr> <td>Other: <u>excavation, ex situ treatment, on-site disposal in southern portion. 2.5s in north</u></td> <td></td> </tr> </table>		Landfill cover/containment	Monitored natural attenuation	Access controls	Groundwater containment	<u>Institutional controls</u>	Vertical barrier walls	Groundwater pump and treatment		Surface water collection and treatment		Other: <u>excavation, ex situ treatment, on-site disposal in southern portion. 2.5s in north</u>	
Landfill cover/containment	Monitored natural attenuation												
Access controls	Groundwater containment												
<u>Institutional controls</u>	Vertical barrier walls												
Groundwater pump and treatment													
Surface water collection and treatment													
Other: <u>excavation, ex situ treatment, on-site disposal in southern portion. 2.5s in north</u>													
Attachments: Inspection team roster attached	Site map attached												
II. INTERVIEWS (Check all that apply)													
1. O&M site manager <u>Blant Thomas P.E.</u> <u>Restoration PM</u> <u>8-22-04</u>													
Name	Title												
Interviewed <u>at site</u> at office by phone	Phone no. _____												
Problems, suggestions; Report attached _____													
2. O&M staff <u>N/A</u>													
Name	Title												
Interviewed at site at office by phone	Phone no. _____												
Problems, suggestions; Report attached _____													

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	N/A N/A N/A
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	N/A N/A
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	N/A
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	N/A N/A N/A N/A
5.	Gas Generation Records Remarks _____	Readily available	Up to date	N/A
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	N/A
7.	Groundwater Monitoring Records Remarks _____	Readily available	Up to date	N/A
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	N/A N/A
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	N/A

IV. O&M COSTS

NR

1. O&M Organization

State in-house Contractor for State
 PRP in-house Contractor for PRP
 Federal Facility in-house Contractor for Federal Facility
 Other _____

2. O&M Cost Records

Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. Fencing damaged Location shown on site map Gates secured N/A
 Remarks *No fence*

B. Other Access Restrictions

1. Signs and other security measures Location shown on site map N/A
 Remarks *Site is within fenced AFB with access control*

C. Institutional Controls (ICs)

1. Implementation and enforcement

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) conducted by water
 Frequency monthly
 Responsible party/agency Cuba AFB water program mgr
 Contact _____

	Name	Title	Date	Phone no.
Reporting is up-to-date			Yes	No <input checked="" type="radio"/> N/A
Reports are verified by the lead agency			Yes	No <input checked="" type="radio"/> N/A
Specific requirements in deed or decision documents have been met			<input checked="" type="radio"/> Yes	No N/A
Violations have been reported			Yes	No N/A
Other problems or suggestions:	Report attached			
_____	_____			
_____	_____			

2. Adequacy
Remarks _____

ICs are adequate ICs are inadequate N/A

D. General

1. Vandalism/trespassing Location shown on site map No vandalism evident
Remarks _____

2. Land use changes on site N/A No
Remarks _____

3. Land use changes off site N/A No
Remarks _____

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. Roads damaged Location shown on site map Roads adequate N/A
Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A

A. Landfill Surface

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
Areal extent _____ Depth _____
Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
Lengths _____ Widths _____ Depths _____
Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
Areal extent _____ Depth _____
Remarks _____

4. **Holes** Location shown on site map Holes not evident
Areal extent _____ Depth _____
Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
Trees/Shrubs (indicate size and locations on a diagram)
Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
Areal extent _____ Height _____
Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
Wet areas Location shown on site map Areal extent _____
Ponding Location shown on site map Areal extent _____
Seeps Location shown on site map Areal extent _____
Soft subgrade Location shown on site map Areal extent _____
Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting	Location shown on site map	No evidence of undercutting	
	Areal extent _____	Depth _____		
	Remarks _____			
5.	Obstructions	Type _____	No obstructions	
	Location shown on site map	Areal extent _____		
	Size _____			
	Remarks _____			
6.	Excessive Vegetative Growth	Type _____		
	No evidence of excessive growth			
	Vegetation in channels does not obstruct flow			
	Location shown on site map	Areal extent _____		
	Remarks _____			
D. Cover Penetrations Applicable <u>N/A</u>				
1.	Gas Vents	Active	Passive	
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	
	N/A			
	Remarks _____			
2.	Gas Monitoring Probes			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	N/A
	Remarks _____			
3.	Monitoring Wells (within surface area of landfill)			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	N/A
	Remarks _____			
4.	Leachate Extraction Wells			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	N/A
	Remarks _____			
5.	Settlement Monuments	Located	Routinely surveyed	N/A
	Remarks _____			

E. Gas Collection and Treatment		Applicable	N/A
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____		
F. Cover Drainage Layer		Applicable	N/A
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Functioning N/A Remarks _____		
4.	Dam Functioning N/A Remarks _____		

H. Retaining Walls		Applicable	<u>N/A</u>
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	<u>N/A</u>
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	N/A
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply) Metals removal Oil/water separation <u>Bioremediation</u> Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks <u>contaminated soil treated off site</u> <u>using composting</u>		
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels N/A Good condition Proper secondary containment Needs Maintenance Remarks _____		
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks _____		
5.	Treatment Building(s) N/A Good condition (esp. roof and doorways) Needs repair Chemicals and equipment properly stored Remarks _____		
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked Functioning Routinely sampled Good condition All required wells located Needs Maintenance N/A Remarks _____		
D. Monitoring Data			
1.	Monitoring Data Is routinely submitted on time <u>N/A</u> Is of acceptable quality		
2.	Monitoring data suggests: Groundwater plume is effectively contained Contaminant concentrations are declining		

D. Monitored Natural Attenuation

1. Monitoring Wells (natural attenuation remedy)			
Properly secured/locked	Functioning	Routinely sampled	Good condition
All required wells located	Needs Maintenance		N/A
Remarks			

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Remedy for northern portion was excavation with off-site compacting. Treated soils (PRGs) returned to site and used as backfill.

Remedy for southern portion was IC only. DEUR (formerly VEMUR) in place.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION			
Site name: <u>FT-07E</u>	Date of inspection: <u>8-21-06</u>		
Location and Region: <u>Luke AFB, AZ (9)</u>	EPA ID: <u>AZ0570024133</u>		
Agency, office, or company leading the five-year review: <u>Luke AFB</u>	Weather/temperature: <u>clear, sunny</u>		
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____ </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls </td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls
<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls		
Attachments: Inspection team roster attached Site map attached			
II. INTERVIEWS (Check all that apply)			
1. O&M site manager <u>Alan Thomas, P.E.</u> <u>Restoration PM</u> <u>8-8-06</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input checked="" type="radio"/> at site <input type="radio"/> at office by phone Phone no. <u>1023-856-3621</u> Problems, suggestions; Report attached _____			
2. O&M staff <u>NA</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input type="radio"/> at site <input type="radio"/> at office by phone Phone no. _____ Problems, suggestions; Report attached _____			

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u>
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	<u>N/A</u>
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u> <u>N/A</u>
5.	Gas Generation Records Remarks _____	Readily available	Up to date	<u>N/A</u>
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	<u>N/A</u>
7.	Groundwater Monitoring Records Remarks _____	Readily available	Up to date	<u>N/A</u>
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	<u>N/A</u>
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	<u>N/A</u>

IV. O&M COSTS

N/A

1. O&M Organization

State in-house	Contractor for State
PRP in-house	Contractor for PRP
Federal Facility in-house	Contractor for Federal Facility
Other _____	

2. O&M Cost Records

Readily available _____ Up to date _____
 Funding mechanism/agreement in place _____
 Original O&M cost estimate _____ Breakdown attached _____

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured N/A
 Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map N/A
 Remarks *Site within confines of fenced AFB with controlled access.*

C. Institutional Controls (ICs)

1. Implementation and enforcement

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) Visual inspection
 Frequency every 5 years when sampled
 Responsible party/agency Lake AFB
 Contact see II, 1

	Name	Title	Date	Phone no.
Reporting is up-to-date			Yes	No N/A
Reports are verified by the lead agency			Yes	No N/A
Specific requirements in deed or decision documents have been met			Yes	No N/A
Violations have been reported			Yes	No N/A
Other problems or suggestions:	Report attached			

2. Adequacy ICs are adequate ICs are inadequate N/A
 Remarks _____

D. General

1. Vandalism/trespassing Location shown on site map No vandalism evident
 Remarks _____

2. Land use changes on site N/A
 Remarks No

3. Land use changes off site N/A
 Remarks No

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A
1. Roads damaged Location shown on site map Roads adequate N/A
 Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A**A. Landfill Surface**

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
 Soft subgrade Location shown on site map Areal extent _____
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting	Location shown on site map	No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	Obstructions	Type _____	No obstructions
	Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	Excessive Vegetative Growth	Type _____	
	No evidence of excessive growth		
	Vegetation in channels does not obstruct flow		
	Location shown on site map	Areal extent _____	
	Remarks _____		
D. Cover Penetrations Applicable <u>N/A</u>			
1.	Gas Vents	Active	Passive
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Needs Maintenance
	N/A		
	Remarks _____		
2.	Gas Monitoring Probes	Functioning	Routinely sampled
	Properly secured/locked		Good condition
	Evidence of leakage at penetration	Needs Maintenance	N/A
	Remarks _____		
3.	Monitoring Wells (within surface area of landfill)	Functioning	Routinely sampled
	Properly secured/locked		Good condition
	Evidence of leakage at penetration	Needs Maintenance	N/A
	Remarks _____		
4.	Leachate Extraction Wells	Functioning	Routinely sampled
	Properly secured/locked		Good condition
	Evidence of leakage at penetration	Needs Maintenance	N/A
	Remarks _____		
5.	Settlement Monuments	Located	Routinely surveyed
			N/A
	Remarks _____		

E. Gas Collection and Treatment		Applicable	<u>N/A</u>
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____		
F. Cover Drainage Layer		Applicable	<u>N/A</u>
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Functioning N/A Remarks _____		
4.	Dam Functioning N/A Remarks _____		

H. Retaining Walls		Applicable	<u>N/A</u>
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	<u>N/A</u>
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching _____

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	N/A
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply) Metals removal Air stripping Filters Additive (e.g., chelation agent, flocculent) Others Good condition Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually Quantity of surface water treated annually Remarks	Oil/water separation Carbon adsorbers	Bioremediation
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Remarks	Good condition	Needs Maintenance
3.	Tanks, Vaults, Storage Vessels N/A Remarks	Good condition	Proper secondary containment Needs Maintenance
4.	Discharge Structure and Appurtenances N/A Remarks	Good condition	Needs Maintenance
5.	Treatment Building(s) N/A Chemicals and equipment properly stored Remarks	Good condition (esp. roof and doorways)	Needs repair
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked All required wells located Remarks	Functioning Needs Maintenance	Routinely sampled N/A Good condition
D. Monitoring Data			
1.	Monitoring Data	Is routinely submitted on time	Is of acceptable quality
2.	Monitoring data suggests:	Groundwater plume is effectively contained Contaminant concentrations are declining	

D. Monitored Natural Attenuation

MA

1. Monitoring Wells (natural attenuation remedy)	Functioning	Routinely sampled	Good condition
Properly secured/locked	Needs Maintenance		N/A
All required wells located			
Remarks			

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Cube AFO operated temporary SVE system from April 1992 to Dec. 1998. 14,000 pounds of TPH contaminants well recovered & treated. No groundwater impact.

VE MUR in place with ADSQ to prevent contact with contaminated soil & future development.

Remedy functioning & protective.

B. Adequacy of O&M

MA

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

N/A

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

N/A

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u>
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	<u>N/A</u>
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u> <u>N/A</u>
5.	Gas Generation Records Remarks _____	Readily available	Up to date	<u>N/A</u>
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	<u>N/A</u>
7.	Groundwater Monitoring Records Remarks _____	Readily available	Up to date	<u>N/A</u>
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	<u>N/A</u>
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	<u>N/A</u>

IV. O&M COSTS

N/A

1. O&M Organization

State in-house	Contractor for State
PRP in-house	Contractor for PRP
Federal Facility in-house	Contractor for Federal Facility
Other _____	

2. O&M Cost Records

Readily available _____ Up to date _____
 Funding mechanism/agreement in place _____
 Original O&M cost estimate _____ Breakdown attached _____

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS *Applicable* N/A

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured *N/A*
 Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map N/A
 Remarks *Site is within confines of fenced AFB with controlled access*

C. Institutional Controls (ICs)

1. Implementation and enforcement

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) _____

Frequency when notified construction may occur

Responsible party/agency CAHAFB

Contact Alan Thomas

Name	Title	Date	Phone no.
------	-------	------	-----------

Reporting is up-to-date Yes No N/A
 Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A
 Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

2. Adequacy ICs are adequate ICs are inadequate N/A
 Remarks _____

D. General

1. Vandalism/trespassing Location shown on site map No vandalism evident
 Remarks _____

2. Land use changes on site N/A
 Remarks No

3. Land use changes off site N/A
 Remarks No

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. Roads damaged Location shown on site map Roads adequate N/A
 Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A**A. Landfill Surface**

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
 Soft subgrade Location shown on site map Areal extent _____
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	No evidence of undercutting
5.	Obstructions Location shown on site map _____ Size _____ Remarks _____	Type _____	No obstructions Areal extent _____
6.	Excessive Vegetative Growth No evidence of excessive growth Vegetation in channels does not obstruct flow Location shown on site map _____ Remarks _____	Type _____	Areal extent _____
D. Cover Penetrations Applicable <u>N/A</u>			
1.	Gas Vents Properly secured/locked _____ Evidence of leakage at penetration _____ N/A Remarks _____	Active _____ Passive _____ Functioning _____	Routinely sampled _____ Needs Maintenance _____ Good condition _____
2.	Gas Monitoring Probes Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning _____	Routinely sampled _____ Needs Maintenance _____ Good condition _____ N/A _____
3.	Monitoring Wells (within surface area of landfill) Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning _____	Routinely sampled _____ Needs Maintenance _____ Good condition _____ N/A _____
4.	Leachate Extraction Wells Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning _____	Routinely sampled _____ Needs Maintenance _____ Good condition _____ N/A _____
5.	Settlement Monuments Remarks _____	Located _____	Routinely surveyed _____ N/A _____

E. Gas Collection and Treatment		Applicable	<u>N/A</u>
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____ _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____ _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____ _____		
F. Cover Drainage Layer		Applicable	<u>N/A</u>
1.	Outlet Pipes Inspected Remarks _____ _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____ _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____ _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____ _____		
3.	Outlet Works Remarks _____ _____	Functioning	N/A
4.	Dam Remarks _____ _____	Functioning	N/A

H. Retaining Walls		Applicable	N/A
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	N/A
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	N/A
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching _____

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	N/A
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	<u>N/A</u>
1.	Treatment Train (Check components that apply) Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels N/A Good condition Proper secondary containment Needs Maintenance Remarks _____		
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks _____		
5.	Treatment Building(s) N/A Good condition (esp. roof and doorways) Needs repair Chemicals and equipment properly stored Remarks _____		
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked Functioning Routinely sampled Good condition All required wells located Needs Maintenance N/A Remarks _____		
D. Monitoring Data		<u>N/A</u>	
1.	Monitoring Data Is routinely submitted on time Is of acceptable quality		
2.	Monitoring data suggests: Groundwater plume is effectively contained Contaminant concentrations are declining		

D. Monitored Natural Attenuation

1. Monitoring Wells (natural attenuation remedy)			
Properly secured/locked	Functioning	Routinely sampled	Good condition
All required wells located	Needs Maintenance		N/A
Remarks _____			

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

VEMU in place to restrict land use and minimize potential for contact. No groundwater remedy required.

IC's are adequate

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION			
Site name: <u>LF-14</u>	Date of inspection:		
Location and Region: <u>Wurtsmith AFB AZ (9)</u>	EPA ID: <u>AZD57DD24133</u>		
Agency, office, or company leading the five-year review: <u>Wurtsmith AFB</u>	Weather/temperature:		
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____ </td> <td style="width: 50%; border: none;"> <input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls </td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls
<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls		
Attachments: Inspection team roster attached Site map attached			
II. INTERVIEWS (Check all that apply)			
1. O&M site manager <u>Alan Thomas P.E. Restoration PM</u> _____ <div style="display: flex; justify-content: space-between; width: 100%;"> Name Title Date </div> Interviewed at site <input type="checkbox"/> at office <input type="checkbox"/> by phone <input type="checkbox"/> Phone no. _____ Problems, suggestions; Report attached _____ _____			
2. O&M staff <u>N/A</u> _____ <div style="display: flex; justify-content: space-between; width: 100%;"> Name Title Date </div> Interviewed at site <input type="checkbox"/> at office <input type="checkbox"/> by phone <input type="checkbox"/> Phone no. _____ Problems, suggestions; Report attached _____ _____			

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply) *N/A*

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	N/A N/A N/A
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	N/A N/A
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	N/A
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	N/A N/A N/A N/A
5.	Gas Generation Records Remarks _____	Readily available	Up to date	N/A
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	N/A
7.	Groundwater Monitoring Records Remarks _____	Readily available	Up to date	N/A
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	N/A N/A
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	N/A

IV. O&M COSTS

N/A

1. O&M Organization

State in-house Contractor for State
 PRP in-house Contractor for PRP
 Federal Facility in-house Contractor for Federal Facility
 Other _____

2. O&M Cost Records

Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable *N/A*

A. Fencing

1. Fencing damaged Location shown on site map Gates secured *N/A*
 Remarks _____

B. Other Access Restrictions

1. Signs and other security measures Location shown on site map *N/A*
 Remarks *Site is within confines of fenced AFIB with controlled access*

C. Institutional Controls (ICs)

1. Implementation and enforcement

Site conditions imply ICs not properly implemented
Site conditions imply ICs not being fully enforced

Yes No N/A
Yes No N/A

Type of monitoring (e.g., self-reporting, drive by)

Frequency if construction is planned; at 5-yr. review

Responsible party/agency Lake AFIS

Contact Alan Thomas

Name Title Date Phone no.

Reporting is up-to-date

Yes No N/A

Reports are verified by the lead agency

Yes No N/A

Specific requirements in deed or decision documents have been met

Yes No N/A

Violations have been reported

Yes No N/A

Other problems or suggestions: Report attached

2. Adequacy
Remarks

ICs are adequate

ICs are inadequate

N/A

D. General

1. Vandalism/trespassing
Remarks

Location shown on site map

No vandalism evident

2. Land use changes on site N/A
Remarks

No

3. Land use changes off site N/A
Remarks

No

VI. GENERAL SITE CONDITIONS

A. Roads Applicable

N/A

1. Roads damaged
Remarks

Location shown on site map

Roads adequate N/A

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A**A. Landfill Surface**

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
 Soft subgrade Location shown on site map Areal extent _____
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting Areal extent _____ Remarks _____	Location shown on site map Depth _____	No evidence of undercutting
5.	Obstructions Location shown on site map Size _____ Remarks _____	Type _____	No obstructions Areal extent _____
6.	Excessive Vegetative Growth No evidence of excessive growth Vegetation in channels does not obstruct flow Location shown on site map Remarks _____	Type _____	Areal extent _____
D. Cover Penetrations Applicable <u>N/A</u>			
1.	Gas Vents Properly secured/locked Evidence of leakage at penetration N/A Remarks _____	Active Passive Functioning	Routinely sampled Good condition Needs Maintenance
2.	Gas Monitoring Probes Properly secured/locked Evidence of leakage at penetration Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
3.	Monitoring Wells (within surface area of landfill) Properly secured/locked Evidence of leakage at penetration Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
4.	Leachate Extraction Wells Properly secured/locked Evidence of leakage at penetration Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
5.	Settlement Monuments Remarks _____	Located	Routinely surveyed N/A

E. Gas Collection and Treatment		Applicable	N/A
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____		
F. Cover Drainage Layer		Applicable	N/A
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ Siltation not evident Remarks _____		N/A
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Remarks _____	Functioning	N/A
4.	Dam Remarks _____	Functioning	N/A

H. Retaining Walls		Applicable	N/A
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	N/A
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	N/A
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	<u>N/A</u>
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	<u>N/A</u>
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply) Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels N/A Good condition Proper secondary containment Needs Maintenance Remarks _____		
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks _____		
5.	Treatment Building(s) N/A Good condition (esp. roof and doorways) Needs repair Chemicals and equipment properly stored Remarks _____		
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked Functioning Routinely sampled Good condition All required wells located Needs Maintenance N/A Remarks _____		
D. Monitoring Data		N/A	
1.	Monitoring Data Is routinely submitted on time Is of acceptable quality		
2.	Monitoring data suggests: Groundwater plume is effectively contained Contaminant concentrations are declining		

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

IV. O&M COSTS

N/A

1. **O&M Organization**
 State in-house Contractor for State
 PRP in-house Contractor for PRP
 Federal Facility in-house Contractor for Federal Facility
 Other _____

2. **O&M Cost Records**
 Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. **Unanticipated or Unusually High O&M Costs During Review Period**
 Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured N/A
 Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map N/A
 Remarks _____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) _____

Frequency when construction may occur

Responsible party/agency Luke AFB

Contact Alan Thomas

Name Title Date Phone no.

Reporting is up-to-date Yes No N/A

Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A

Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

2. **Adequacy** ICs are adequate ICs are inadequate N/A
 Remarks _____

D. General

1. **Vandalism/trespassing** Location shown on site map No vandalism evident
 Remarks _____

2. **Land use changes on site** N/A
 Remarks No

3. **Land use changes off site** N/A
 Remarks No

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map Roads adequate N/A
 Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A**A. Landfill Surface**

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
 Soft subgrade Location shown on site map Areal extent _____
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4. **Undercutting** Location shown on site map No evidence of undercutting
 Areal extent _____ Depth _____
 Remarks _____

5. **Obstructions** Type _____ No obstructions
 Location shown on site map Areal extent _____
 Size _____
 Remarks _____

6. **Excessive Vegetative Growth** Type _____
 No evidence of excessive growth
 Vegetation in channels does not obstruct flow
 Location shown on site map Areal extent _____
 Remarks _____

D. Cover Penetrations Applicable N/A

1. **Gas Vents** Active Passive
 Properly secured/locked Functioning Routinely sampled Good condition
 Evidence of leakage at penetration Needs Maintenance
 N/A
 Remarks _____

2. **Gas Monitoring Probes**
 Properly secured/locked Functioning Routinely sampled Good condition
 Evidence of leakage at penetration Needs Maintenance N/A
 Remarks _____

3. **Monitoring Wells (within surface area of landfill)**
 Properly secured/locked Functioning Routinely sampled Good condition
 Evidence of leakage at penetration Needs Maintenance N/A
 Remarks _____

4. **Leachate Extraction Wells**
 Properly secured/locked Functioning Routinely sampled Good condition
 Evidence of leakage at penetration Needs Maintenance N/A
 Remarks _____

5. **Settlement Monuments** Located Routinely surveyed N/A
 Remarks _____

E. Gas Collection and Treatment		Applicable	N/A
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____		
F. Cover Drainage Layer		Applicable	N/A
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Functioning N/A Remarks _____		
4.	Dam Functioning N/A Remarks _____		

H. Retaining Walls		Applicable	<u>N/A</u>
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	<u>N/A</u>
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching _____

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	<u>N/A</u>
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	<u>N/A</u>
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply) Metals removal Air stripping Filters Additive (e.g., chelation agent, flocculent) Others Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually Quantity of surface water treated annually Remarks	Oil/water separation Carbon adsorbers	Bioremediation
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Remarks	Good condition	Needs Maintenance
3.	Tanks, Vaults, Storage Vessels N/A Remarks	Good condition	Proper secondary containment Needs Maintenance
4.	Discharge Structure and Appurtenances N/A Remarks	Good condition	Needs Maintenance
5.	Treatment Building(s) N/A Chemicals and equipment properly stored Remarks	Good condition (esp. roof and doorways)	Needs repair
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked All required wells located Remarks	Functioning Needs Maintenance	Routinely sampled N/A Good condition
D. Monitoring Data			
1.	Monitoring Data Is routinely submitted on time	N/A Is of acceptable quality	
2.	Monitoring data suggests: Groundwater plume is effectively contained	Contaminant concentrations are declining	

D. Monitored Natural Attenuation

N/A

1. **Monitoring Wells** (natural attenuation remedy)
Properly secured/locked Functioning Routinely sampled Good condition
All required wells located Needs Maintenance N/A
Remarks _____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Contaminated soil was removed and transported off site. Shell was mechanically removed (~2800 pounds). Remaining soil was sampled. All results were below the Soil Remediation Level ARAR of 31 mg/kg for antimony and 400 mg/kg for lead. Treated soil was used as backfill.

VEMUR IC in place

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION			
Site name: <u>RW-02</u>	Date of inspection: <u>8-21-06</u>		
Location and Region: <u>LUKE AFB AZ</u>	EPA ID: <u>AZ0570024133</u>		
Agency, office, or company leading the five-year review: <u>LUKE AFIB</u>	Weather/temperature: <u>clear sunny</u>		
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls * <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other <u>* VEMUR in place (now DEUR)</u> </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls </td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls * <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other <u>* VEMUR in place (now DEUR)</u>	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls
<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls * <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other <u>* VEMUR in place (now DEUR)</u>	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls		
Attachments: Inspection team roster attached	Site map attached		
II. INTERVIEWS (Check all that apply)			
1. O&M site manager <u>Alan Thomas PE Restoration Mgr</u> <u>8-8-06</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>623-856-3621</u> Problems, suggestions; Report attached _____			
2. O&M staff <u>N/A</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; Report attached _____			

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u>
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	<u>N/A</u>
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u> <u>N/A</u>
5.	Gas Generation Records Remarks _____	Readily available	Up to date	<u>N/A</u>
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	<u>N/A</u>
7.	Groundwater Monitoring Records Remarks _____	Readily available	Up to date	<u>N/A</u>
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	<u>N/A</u>
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	<u>N/A</u>

IV. O&M COSTS *N/A*

1. **O&M Organization**
 State in-house Contractor for State
 PRP in-house Contractor for PRP
 Federal Facility in-house Contractor for Federal Facility
 Other _____

2. **O&M Cost Records**
 Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. **Unanticipated or Unusually High O&M Costs During Review Period**
 Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS *Applicable* N/A

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured *N/A*
 Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map N/A
 Remarks *slag pile as level rad waste*
concrete Coffin, buried

C. Institutional Controls (ICs)

1. Implementation and enforcement

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) visual inspection / photos

Frequency annual

Responsible party/agency Lake AFB

Contact _____

Name Title Date Phone no.

Reporting is up-to-date Yes No N/A
 Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A
 Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

2. Adequacy ICs are adequate ICs are inadequate N/A

Remarks SEMUR in place with AZG DER

D. General

1. Vandalism/trespassing Location shown on site map No vandalism evident

Remarks _____

2. Land use changes on site N/A

Remarks _____

3. Land use changes off site N/A

Remarks _____

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. Roads damaged Location shown on site map Roads adequate N/A

Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A

A. Landfill Surface

1.	Settlement (Low spots) Areal extent _____ Remarks _____	Location shown on site map Depth _____	Settlement not evident
2.	Cracks Lengths _____ Widths _____ Remarks _____	Location shown on site map Depths _____	Cracking not evident
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map Depth _____	Erosion not evident
4.	Holes Areal extent _____ Remarks _____	Location shown on site map Depth _____	Holes not evident
5.	Vegetative Cover Grass Trees/Shrubs (indicate size and locations on a diagram) Remarks _____	Cover properly established	No signs of stress
6.	Alternative Cover (armored rock, concrete, etc.) Remarks _____	N/A	
7.	Bulges Areal extent _____ Remarks _____	Location shown on site map Height _____	Bulges not evident
8.	Wet Areas/Water Damage Wet areas _____ Ponding _____ Seeps _____ Soft subgrade _____ Remarks _____	Wet areas/water damage not evident Location shown on site map Location shown on site map Location shown on site map Location shown on site map	Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides _____	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u>				
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u>				
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting	Location shown on site map	No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	Obstructions	Type _____	No obstructions
	Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	Excessive Vegetative Growth	Type _____	
	No evidence of excessive growth		
	Vegetation in channels does not obstruct flow		
	Location shown on site map	Areal extent _____	
	Remarks _____		
D. Cover Penetrations Applicable <u>N/A</u>			
1.	Gas Vents	Active	Passive
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Needs Maintenance
	N/A		
	Remarks _____		
2.	Gas Monitoring Probes	Functioning	Routinely sampled
	Properly secured/locked		Good condition
	Evidence of leakage at penetration	Needs Maintenance	N/A
	Remarks _____		
3.	Monitoring Wells (within surface area of landfill)	Functioning	Routinely sampled
	Properly secured/locked		Good condition
	Evidence of leakage at penetration	Needs Maintenance	N/A
	Remarks _____		
4.	Leachate Extraction Wells	Functioning	Routinely sampled
	Properly secured/locked		Good condition
	Evidence of leakage at penetration	Needs Maintenance	N/A
	Remarks _____		
5.	Settlement Monuments	Located	Routinely surveyed
	Remarks _____		

E. Gas Collection and Treatment		Applicable	<u>N/A</u>
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____		
F. Cover Drainage Layer		Applicable	<u>N/A</u>
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Functioning N/A Remarks _____		
4.	Dam Functioning N/A Remarks _____		

H. Retaining Walls		Applicable	<u>N/A</u>
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	<u>N/A</u>
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching _____

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	N/A
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply) Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels N/A Good condition Proper secondary conta Remarks _____		
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks _____		
5.	Treatment Building(s) N/A Good condition (esp. roof and doorw Chemicals and equipment properly stored Remarks _____		
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked Functioning Routine/ All required wells located Needs Maintenance Remarks _____		
D. Monitoring Data			
1.	Monitoring Data <u>Is routinely submitted on time</u>	<u>Is of acceptable quality</u>	<i>for rad monitoring</i>
2.	Monitoring data suggests: Groundwater plume is effectively contained Contaminant concentrations are declining		

Ask about stormwater

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
Properly secured/locked Functioning Routinely sampled Good condition
All required wells located Needs Maintenance N/A
Remarks _____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.)

Low level radiation waste was encapsulated in concrete and buried at Defense Reutilization Marketing Office yard. Site is fenced and placarded. Burial site marked with concrete marker. VEMUR in place with ADEQ.

Remedy is effective in controlling land use and restricting future development. Radiation monitoring is required for 30 years

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

N/A

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

MW-124 is collapsed so no groundwater samples can be collected in 2006.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION													
Site name: <u>5D-2D</u>	Date of inspection: <u>8-26-06</u>												
Location and Region: <u>Lake AFB A7 (4)</u>	EPA ID: <u>AZ0570024133</u>												
Agency, office, or company leading the five-year review: <u>Lake AFB</u>	Weather/temperature: <u>Clear</u>												
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Landfill cover/containment</td> <td style="width: 50%;">Monitored natural attenuation</td> </tr> <tr> <td>Access controls</td> <td>Groundwater containment</td> </tr> <tr> <td>Institutional controls</td> <td>Vertical barrier walls</td> </tr> <tr> <td>Groundwater pump and treatment</td> <td></td> </tr> <tr> <td>Surface water collection and treatment</td> <td></td> </tr> <tr> <td colspan="2">* Other: <u>Not in ROD Added to DTM in 2002</u></td> </tr> </table>		Landfill cover/containment	Monitored natural attenuation	Access controls	Groundwater containment	Institutional controls	Vertical barrier walls	Groundwater pump and treatment		Surface water collection and treatment		* Other: <u>Not in ROD Added to DTM in 2002</u>	
Landfill cover/containment	Monitored natural attenuation												
Access controls	Groundwater containment												
Institutional controls	Vertical barrier walls												
Groundwater pump and treatment													
Surface water collection and treatment													
* Other: <u>Not in ROD Added to DTM in 2002</u>													
Attachments: Inspection team roster attached	Site map attached												
II. INTERVIEWS (Check all that apply)													
1. O&M site manager <u>Alan Thomas P.E.</u> <u>Restoration PM</u> <u>8-8-06</u>													
Name	Title												
Interviewed at site at office by phone	Phone no. <u>625-856-3621</u>												
Problems, suggestions; Report attached _____													
2. O&M staff <u>N/A</u>													
Name	Title												
Interviewed at site at office by phone	Phone no. _____												
Problems, suggestions; Report attached _____													

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply) *N/A*

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	N/A N/A N/A
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	N/A N/A
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	N/A
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	N/A N/A N/A N/A
5.	Gas Generation Records Remarks _____	Readily available	Up to date	N/A
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	N/A
7.	Groundwater Monitoring Records Remarks _____	Readily available	Up to date	N/A
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	N/A N/A
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	N/A

IV. O&M COSTS

N/A

1. O&M Organization

State in-house Contractor for State
 PRP in-house Contractor for PRP
 Federal Facility in-house Contractor for Federal Facility
 Other _____

2. O&M Cost Records

Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured N/A
 Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map N/A
 Remarks *Site is within confines of fenced AFB with controlled access*

C. Institutional Controls (ICs)

N/A

1. Implementation and enforcement

Site conditions imply ICs not properly implemented Yes No N/A
Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) *Visual inspection*

Frequency *at 5-year review*

Responsible party/agency *USACE AFB*

Contact _____

Name Title Date Phone no.

Reporting is up-to-date Yes No N/A
Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A
Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

2. Adequacy ICs are adequate ICs are inadequate N/A
Remarks _____

D. General

1. Vandalism/trespassing Location shown on site map No vandalism evident
Remarks _____

2. Land use changes on site N/A *No*
Remarks _____

3. Land use changes off site N/A *No*
Remarks _____

VI. GENERAL SITE CONDITIONS

N/A

A. Roads Applicable N/A

1. Roads damaged Location shown on site map Roads adequate N/A
Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A

A. Landfill Surface

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
 Soft subgrade Location shown on site map Areal extent _____
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting	Location shown on site map	No evidence of undercutting	
	Areal extent _____	Depth _____		
	Remarks _____			
5.	Obstructions	Type _____	No obstructions	
	Location shown on site map	Areal extent _____		
	Size _____			
	Remarks _____			
6.	Excessive Vegetative Growth	Type _____		
	No evidence of excessive growth			
	Vegetation in channels does not obstruct flow			
	Location shown on site map	Areal extent _____		
	Remarks _____			
D. Cover Penetrations Applicable <u>N/A</u>				
1.	Gas Vents	Active Passive		
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	
	N/A			
	Remarks _____			
2.	Gas Monitoring Probes			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	N/A
	Remarks _____			
3.	Monitoring Wells (within surface area of landfill)			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	N/A
	Remarks _____			
4.	Leachate Extraction Wells			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	Evidence of leakage at penetration		Needs Maintenance	N/A
	Remarks _____			
5.	Settlement Monuments	Located	Routinely surveyed	N/A
	Remarks _____			

E. Gas Collection and Treatment		Applicable	N/A
1.	Gas Treatment Facilities Flaring Thermal destruction Good condition Needs Maintenance Remarks _____		Collection for reuse
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____		
F. Cover Drainage Layer		Applicable	N/A
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ Siltation not evident Remarks _____		N/A
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Remarks _____	Functioning	N/A
4.	Dam Remarks _____	Functioning	N/A

H. Retaining Walls		Applicable	N/A
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	N/A
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	N/A
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	N/A
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply)		
	Metals removal	Oil/water separation	Bioremediation
	Air stripping	Carbon adsorbers	
	Filters		
	Additive (e.g., chelation agent, flocculent) _____		
	Others _____		
	Good condition	Needs Maintenance	
	Sampling ports properly marked and functional		
	Sampling/maintenance log displayed and up to date		
	Equipment properly identified		
	Quantity of groundwater treated annually _____		
	Quantity of surface water treated annually _____		
	Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional)		
	N/A	Good condition	Needs Maintenance
	Remarks _____		
3.	Tanks, Vaults, Storage Vessels		
	N/A	Good condition	Proper secondary containment Needs Maintenance
	Remarks _____		
4.	Discharge Structure and Appurtenances		
	N/A	Good condition	Needs Maintenance
	Remarks _____		
5.	Treatment Building(s)		
	N/A	Good condition (esp. roof and doorways)	Needs repair
	Chemicals and equipment properly stored		
	Remarks _____		
6.	Monitoring Wells (pump and treatment remedy)		
	Properly secured/locked	Functioning	Routinely sampled Good condition
	All required wells located	Needs Maintenance	N/A
	Remarks _____		
D. Monitoring Data			
1.	Monitoring Data		
	Is routinely submitted on time	Is of acceptable quality	
2.	Monitoring data suggests:		
	Groundwater plume is effectively contained Contaminant concentrations are declining		

D. Monitored Natural Attenuation

N/A

1. **Monitoring Wells** (natural attenuation remedy)
Properly secured/locked Functioning Routinely sampled Good condition
All required wells located Needs Maintenance N/A
Remarks _____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

SD-20 is not in ROD. ADEQ requested that groundwater samples be collected at the 5-year review cycle.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency ADEQ
Contact Stanley C. Duffly Federal PM 520 628-6733
Name Title Date Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____

4. **Other interviews (optional)** Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u>
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	<u>N/A</u>
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u> <u>N/A</u>
5.	Gas Generation Records Remarks _____	Readily available	Up to date	<u>N/A</u>
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	<u>N/A</u>
7.	Groundwater Monitoring Records Remarks _____	Readily available	Up to date	<u>N/A</u>
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	<u>N/A</u>
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	<u>N/A</u>

IV. O&M COSTS

N/A

1. O&M Organization

State in-house	Contractor for State
PRP in-house	Contractor for PRP
Federal Facility in-house	Contractor for Federal Facility
Other _____	_____

2. O&M Cost Records

Readily available _____ Up to date _____
 Funding mechanism/agreement in place _____
 Original O&M cost estimate _____ Breakdown attached _____

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. Fencing damaged Location shown on site map Gates secured N/A
 Remarks _____

B. Other Access Restrictions

1. Signs and other security measures Location shown on site map N/A
 Remarks *Within confines of fenced AFB with controlled access*

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) Visual
 Frequency Inspected as part of SPC plan
 Responsible party/agency Luft AFB
 Contact _____

	Name	Title	Date	Phone no.
Reporting is up-to-date				Yes No <input checked="" type="radio"/> N/A
Reports are verified by the lead agency				Yes No <input checked="" type="radio"/> N/A
Specific requirements in deed or decision documents have been met				<input checked="" type="radio"/> Yes <input type="radio"/> No N/A
Violations have been reported				Yes <input checked="" type="radio"/> No <input type="radio"/> N/A
Other problems or suggestions:	Report attached			
_____	_____			
_____	_____			

2. **Adequacy** ICs are adequate ICs are inadequate N/A
 Remarks VE MUR in place with ADEQ

D. General

1. **Vandalism/trespassing** Location shown on site map No vandalism evident
 Remarks _____

2. **Land use changes on site** N/A
 Remarks _____

3. **Land use changes off site** N/A
 Remarks _____

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map Roads adequate N/A
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting	Location shown on site map	No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	Obstructions	Type _____	No obstructions
	Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	Excessive Vegetative Growth	Type _____	
	No evidence of excessive growth		
	Vegetation in channels does not obstruct flow		
	Location shown on site map	Areal extent _____	
	Remarks _____		
D. Cover Penetrations Applicable <u>N/A</u>			
1.	Gas Vents	Active <input type="checkbox"/> Passive <input checked="" type="checkbox"/>	
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Needs Maintenance
	N/A		
	Remarks _____		
2.	Gas Monitoring Probes	Active <input type="checkbox"/> Passive <input type="checkbox"/>	
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Needs Maintenance
	Good condition		
	N/A		
	Remarks _____		
3.	Monitoring Wells (within surface area of landfill)		
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Needs Maintenance
	Good condition		
	N/A		
	Remarks _____		
4.	Leachate Extraction Wells		
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Needs Maintenance
	Good condition		
	N/A		
	Remarks _____		
5.	Settlement Monuments	Located	Routinely surveyed
	N/A		
	Remarks _____		

E. Gas Collection and Treatment		Applicable	N/A
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance Remarks _____		N/A
F. Cover Drainage Layer		Applicable	N/A
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ Siltation not evident Remarks _____		N/A
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Functioning N/A Remarks _____		
4.	Dam Functioning N/A Remarks _____		

H. Retaining Walls		Applicable	<u>N/A</u>
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	<u>N/A</u>
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching _____

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	N/A
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply) Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels N/A Good condition Proper secondary containment Needs Maintenance Remarks _____		
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks _____		
5.	Treatment Building(s) N/A Good condition (esp. roof and doorways) Needs repair Chemicals and equipment properly stored Remarks _____		
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked Functioning Routinely sampled Good condition All required wells located Needs Maintenance N/A Remarks _____		
D. Monitoring Data			
1.	Monitoring Data Is routinely submitted on time Is of acceptable quality		
2.	Monitoring data suggests: Groundwater plume is effectively contained Contaminant concentrations are declining		

D. Monitored Natural Attenuation

I.	Monitoring Wells (natural attenuation remedy)			
	Properly secured/locked	Functioning	Routinely sampled	Good condition
	All required wells located	Needs Maintenance		N/A
	Remarks _____			

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Remedy is F.C.s. VEMUR in place
No changes to land use

B. Adequacy of O&M

N/A

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: <u>SS-42</u>	Date of inspection: <u>8-23-06</u>
Location and Region: <u>Luke AFB AZ (9)</u>	EPA ID: <u>AZ0570024133</u>
Agency, office, or company leading the five-year review: <u>Luke AFB</u>	Weather/temperature: <u>clear, sunny</u>
Remedy Includes: (Check all that apply) <ul style="list-style-type: none"> Landfill cover/containment Access controls Institutional controls Groundwater pump and treatment Surface water collection and treatment Other <u>source removal using SVE to document no GW impacts</u> <div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block; margin-left: 200px;"> Monitored natural attenuation Groundwater containment Vertical barrier walls </div>	
Attachments: Inspection team roster attached	Site map attached
II. INTERVIEWS (Check all that apply)	
1. O&M site manager <u>Alan Thomas, P.E.</u> <u>Restoration AM</u> <u>8-23-06</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>623-826-3621</u> Problems, suggestions; Report attached _____	
2. O&M staff <u>N/A</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; Report attached _____	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u>
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	<u>N/A</u>
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u> <u>N/A</u>
5.	Gas Generation Records Remarks _____	Readily available	Up to date	<u>N/A</u>
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	<u>N/A</u>
7.	Groundwater Monitoring Records Remarks _____	<u>Readily available</u>	<u>Up to date</u>	N/A
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	<u>N/A</u>
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	<u>N/A</u>

IV. O&M COSTS *N/A*

1. O&M Organization

State in-house	Contractor for State
PRP in-house	Contractor for PRP
Federal Facility in-house	Contractor for Federal Facility
Other _____	

2. O&M Cost Records

Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable *N/A*

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured *N/A*
 Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map *N/A*
 Remarks *Site is within confines of fenced AFB with controlled access.*

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact _____

	Name	Title	Date	Phone no.
--	------	-------	------	-----------

Reporting is up-to-date Yes No N/A
 Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A
 Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

This site is included in Institutional Control but there are no ICs in place. Remove from plan on next update.

2. Adequacy ICs are adequate ICs are inadequate N/A

Remarks _____

D. General

1. **Vandalism/trespassing** Location shown on site map No vandalism evident
 Remarks N/A

2. **Land use changes on site** N/A
 Remarks None

3. **Land use changes off site** N/A
 Remarks None

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map Roads adequate N/A
 Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A**A. Landfill Surface**

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
 Soft subgrade Location shown on site map Areal extent _____
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	No evidence of undercutting
5.	Obstructions Location shown on site map _____ Size _____ Remarks _____	Type _____	No obstructions Areal extent _____
6.	Excessive Vegetative Growth No evidence of excessive growth Vegetation in channels does not obstruct flow Location shown on site map _____ Remarks _____	Type _____	Areal extent _____
D. Cover Penetrations Applicable <u>N/A</u>			
1.	Gas Vents Properly secured/locked _____ Evidence of leakage at penetration _____ N/A Remarks _____	Active Passive Functioning	Routinely sampled Good condition Needs Maintenance
2.	Gas Monitoring Probes Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
3.	Monitoring Wells (within surface area of landfill) Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
4.	Leachate Extraction Wells Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
5.	Settlement Monuments Remarks _____	Located	Routinely surveyed N/A

E. Gas Collection and Treatment		Applicable	<u>N/A</u>
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____		
F. Cover Drainage Layer		Applicable	<u>N/A</u>
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Remarks _____	Functioning	N/A
4.	Dam Remarks _____	Functioning	N/A

H. Retaining Walls		Applicable	<u>N/A</u>
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map Depth _____	Siltation not evident
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map Type _____	N/A
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map Depth _____	Erosion not evident
4.	Discharge Structure Remarks _____	Functioning	N/A
VIII. VERTICAL BARRIER WALLS		Applicable	<u>N/A</u>
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map Depth _____	Settlement not evident
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____ Evidence of breaching _____	

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	N/A
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply) Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels N/A Good condition Proper secondary containment Needs Maintenance Remarks _____		
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks _____		
5.	Treatment Building(s) N/A Good condition (esp. roof and doorways) Needs repair Chemicals and equipment properly stored Remarks _____		
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked Functioning Routinely sampled Good condition All required wells located Needs Maintenance N/A Remarks _____		
D. Monitoring Data			
1.	Monitoring Data	Is routinely submitted on time	Is of acceptable quality
2.	Monitoring data suggests:	Groundwater plume is effectively contained	Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells (natural attenuation remedy)**
Properly secured/locked Functioning Routinely sampled Good condition
All required wells located Needs Maintenance ~~N/A~~

Remarks _____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

SVE system operated 1996-1998 (before ROD was signed) to mitigate soil source. ARAA was ADR soil removal standard. ~400,000 of total volatile hydrocarbons were removed. BTEX concentrations were reduced by 87%. SVE not conducted under ROD. Site now in LTM. Sampled annually.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: <u>SS-42</u>	Date of inspection: <u>8-23-06</u>
Location and Region: <u>Luke AFB AZ (9)</u>	EPA ID: <u>AZ0570024133</u>
Agency, office, or company leading the five-year review: <u>Luke AFB</u>	Weather/temperature: <u>clear, sunny</u>
Remedy Includes: (Check all that apply) <ul style="list-style-type: none"> Landfill cover/containment Access controls Institutional controls Groundwater pump and treatment Surface water collection and treatment Other <u>source removal using SVE to document no GW impacts</u> <div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block; margin-left: 200px;"> Monitored natural attenuation Groundwater containment Vertical barrier walls </div>	
Attachments: Inspection team roster attached	Site map attached
II. INTERVIEWS (Check all that apply)	
1. O&M site manager <u>Alan Thomas, P.E.</u> <u>Restoration AM</u> <u>8-23-06</u> <div style="display: flex; justify-content: space-between; margin-left: 100px;"> Name Title Date </div> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>623-826-3621</u> Problems, suggestions; Report attached _____ _____	
2. O&M staff <u>N/A</u> <div style="display: flex; justify-content: space-between; margin-left: 100px;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; Report attached _____ _____	

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	N/A N/A N/A
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	N/A N/A
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	N/A
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	N/A N/A N/A N/A
5.	Gas Generation Records Remarks _____	Readily available	Up to date	N/A
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	N/A
7.	Groundwater Monitoring Records Remarks _____	Readily available	Up to date	N/A
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	N/A N/A
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	N/A

IV. O&M COSTS *N/A*

1. O&M Organization

State in-house	Contractor for State
PRP in-house	Contractor for PRP
Federal Facility in-house	Contractor for Federal Facility
Other _____	

2. O&M Cost Records

Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable *N/A*

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured *N/A*
 Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map *N/A*
 Remarks *Site is within confines of fenced AFB with controlled access.*

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact _____

	Name	Title	Date	Phone no.
--	------	-------	------	-----------

Reporting is up-to-date Yes No N/A
 Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A
 Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

This site is included in Institutional Control but there are no ICs in place. Remove from plan on next update.

2. Adequacy ICs are adequate ICs are inadequate N/A
 Remarks _____

D. General

1. **Vandalism/trespassing** Location shown on site map No vandalism evident
 Remarks N/A

2. **Land use changes on site** N/A
 Remarks None

3. **Land use changes off site** N/A
 Remarks None

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map Roads adequate N/A
 Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A**A. Landfill Surface**

1. **Settlement (Low spots)** Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover (armored rock, concrete, etc.)** N/A
 Remarks _____

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
 Soft subgrade Location shown on site map Areal extent _____
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	No evidence of undercutting
5.	Obstructions Location shown on site map _____ Size _____ Remarks _____	Type _____	No obstructions Areal extent _____
6.	Excessive Vegetative Growth No evidence of excessive growth Vegetation in channels does not obstruct flow Location shown on site map _____ Remarks _____	Type _____	Areal extent _____
D. Cover Penetrations Applicable <u>N/A</u>			
1.	Gas Vents Properly secured/locked _____ Evidence of leakage at penetration _____ N/A Remarks _____	Active Passive Functioning	Routinely sampled Good condition Needs Maintenance
2.	Gas Monitoring Probes Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
3.	Monitoring Wells (within surface area of landfill) Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
4.	Leachate Extraction Wells Properly secured/locked _____ Evidence of leakage at penetration _____ Remarks _____	Functioning	Routinely sampled Good condition Needs Maintenance N/A
5.	Settlement Monuments Remarks _____	Located	Routinely surveyed N/A

E. Gas Collection and Treatment		Applicable	<u>N/A</u>
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____ _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____ _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____ _____		
F. Cover Drainage Layer		Applicable	<u>N/A</u>
1.	Outlet Pipes Inspected Remarks _____ _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____ _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____ _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____ _____		
3.	Outlet Works Remarks _____ _____	Functioning	N/A
4.	Dam Remarks _____ _____	Functioning	N/A

H. Retaining Walls			Applicable	<u>N/A</u>
1.	Deformations Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map	Deformation not evident	Vertical displacement _____
2.	Degradation Remarks _____	Location shown on site map	Degradation not evident	
I. Perimeter Ditches/Off-Site Discharge			Applicable	<u>N/A</u>
1.	Siltation Areal extent _____ Remarks _____	Location shown on site map	Siltation not evident	Depth _____
2.	Vegetative Growth Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map	N/A	Type _____
3.	Erosion Areal extent _____ Remarks _____	Location shown on site map	Erosion not evident	Depth _____
4.	Discharge Structure Remarks _____	Functioning	N/A	
VIII. VERTICAL BARRIER WALLS			Applicable	<u>N/A</u>
1.	Settlement Areal extent _____ Remarks _____	Location shown on site map	Settlement not evident	Depth _____
2.	Performance Monitoring Performance not monitored Frequency _____ Head differential _____ Remarks _____	Type of monitoring _____	Evidence of breaching	

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____ _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	N/A
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____ _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____ _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____ _____		

C. Treatment System		Applicable	<u>N/A</u>
1.	Treatment Train (Check components that apply) Metals removal Oil/water separation Bioremediation Air stripping Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Good condition Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels N/A Good condition Proper secondary containment Needs Maintenance Remarks _____		
4.	Discharge Structure and Appurtenances N/A Good condition Needs Maintenance Remarks _____		
5.	Treatment Building(s) N/A Good condition (esp. roof and doorways) Needs repair Chemicals and equipment properly stored Remarks _____		
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked Functioning Routinely sampled Good condition All required wells located Needs Maintenance N/A Remarks _____		
D. Monitoring Data			
1.	Monitoring Data <u>Is routinely submitted on time</u>		<u>Is of acceptable quality</u>
2.	Monitoring data suggests: Groundwater plume is effectively contained		<u>Contaminant concentrations are declining</u>

D. Monitored Natural Attenuation

1. **Monitoring Wells (natural attenuation remedy)**
Properly secured/locked Functioning Routinely sampled Good condition
All required wells located Needs Maintenance ~~N/A~~

Remarks _____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

SVE system operated 1996-1998 (before ROD was signed) to mitigate soil source. ARAA was ADR soil removal standard. ~400,000 of total volatile hydrocarbons were removed. BTEX concentrations were reduced by 87%. SVE not conducted under ROD. Site now in LTM. Sampled annually.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION			
Site name: <u>ST-18</u>	Date of inspection: <u>8-22-06</u>		
Location and Region: <u>Lake AFB, AZ (9)</u>	EPA ID: <u>AZ0570024133</u>		
Agency, office, or company leading the five-year review: <u>Lake AFB</u>	Weather/temperature: <u>clear</u>		
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____ </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls </td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls
<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls		
Attachments: Inspection team roster attached Site map attached			
II. INTERVIEWS (Check all that apply)			
1. O&M site manager <u>Alan Thomas, P.E.</u> <u>Restoration PM</u> <u>8-22-06</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>623-856-3621</u> Problems, suggestions; Report attached _____ _____			
2. O&M staff <u>N/A</u> <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; Report attached _____ _____			

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	O&M Documents O&M manual As-built drawings Maintenance logs Remarks _____	Readily available Readily available Readily available	Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u>
2.	Site-Specific Health and Safety Plan Contingency plan/emergency response plan Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
3.	O&M and OSHA Training Records Remarks _____	Readily available	Up to date	<u>N/A</u>
4.	Permits and Service Agreements Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	<u>N/A</u> <u>N/A</u> <u>N/A</u> <u>N/A</u>
5.	Gas Generation Records Remarks _____	Readily available	Up to date	<u>N/A</u>
6.	Settlement Monument Records Remarks _____	Readily available	Up to date	<u>N/A</u>
7.	Groundwater Monitoring Records Remarks _____	<u>Readily available</u>	<u>Up to date</u>	N/A
8.	Leachate Extraction Records Remarks _____	Readily available	Up to date	<u>N/A</u>
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	Readily available Readily available	Up to date Up to date	<u>N/A</u> <u>N/A</u>
10.	Daily Access/Security Logs Remarks _____	Readily available	Up to date	<u>N/A</u>

IV. O&M COSTS

N/A

1. O&M Organization

State in-house Contractor for State
 PRP in-house Contractor for PRP
 Federal Facility in-house Contractor for Federal Facility
 Other _____

2. O&M Cost Records

Readily available Up to date
 Funding mechanism/agreement in place
 Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	Breakdown attached
Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. Fencing damaged Location shown on site map Gates secured N/A
 Remarks _____

B. Other Access Restrictions

1. Signs and other security measures Location shown on site map N/A
 Remarks Site is within fenced controlled boundaries of base!

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented Yes No N/A
 Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) Checked periodically by ATF

Frequency _____
 Responsible party/agency Lulu ATF B personnel

Contact _____

Name	Title	Date	Phone no.

Reporting is up-to-date Yes No N/A
 Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A
 Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

2. Adequacy ICs are adequate ICs are inadequate N/A
 Remarks _____

D. General

1. **Vandalism/trespassing** Location shown on site map No vandalism evident
 Remarks _____

2. **Land use changes on site** N/A
 Remarks No

3. **Land use changes off site** N/A
 Remarks No

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map Roads adequate N/A
 Remarks _____

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS Applicable N/A**A. Landfill Surface**

1. **Settlement** (Low spots) Location shown on site map Settlement not evident
 Areal extent _____ Depth _____
 Remarks _____

2. **Cracks** Location shown on site map Cracking not evident
 Lengths _____ Widths _____ Depths _____
 Remarks _____

3. **Erosion** Location shown on site map Erosion not evident
 Areal extent _____ Depth _____
 Remarks _____

4. **Holes** Location shown on site map Holes not evident
 Areal extent _____ Depth _____
 Remarks _____

5. **Vegetative Cover** Grass Cover properly established No signs of stress
 Trees/Shrubs (indicate size and locations on a diagram)
 Remarks _____

6. **Alternative Cover** (armored rock, concrete, etc.) N/A
 Remarks *Concrete cap installed under RCR Act
 1987. Condition is good.*

7. **Bulges** Location shown on site map Bulges not evident
 Areal extent _____ Height _____
 Remarks _____

8. **Wet Areas/Water Damage** Wet areas/water damage not evident
 Wet areas Location shown on site map Areal extent _____
 Ponding Location shown on site map Areal extent _____
 Seeps Location shown on site map Areal extent _____
 Soft subgrade Location shown on site map Areal extent _____
 Remarks _____

9.	Slope Instability Areal extent _____ Remarks _____	Slides	Location shown on site map	No evidence of slope instability
B. Benches Applicable <u>N/A</u> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)				
1.	Flows Bypass Bench Remarks _____		Location shown on site map	N/A or okay
2.	Bench Breached Remarks _____		Location shown on site map	N/A or okay
3.	Bench Overtopped Remarks _____		Location shown on site map	N/A or okay
C. Letdown Channels Applicable <u>N/A</u> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)				
1.	Settlement Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of settlement
2.	Material Degradation Material type _____ Remarks _____		Location shown on site map Areal extent _____	No evidence of degradation
3.	Erosion Areal extent _____ Remarks _____		Location shown on site map Depth _____	No evidence of erosion

4.	Undercutting	Location shown on site map _____	No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	Obstructions	Type _____	No obstructions
	Location shown on site map _____		Areal extent _____
	Size _____		
	Remarks _____		
6.	Excessive Vegetative Growth	Type _____	
	No evidence of excessive growth		
	Vegetation in channels does not obstruct flow		
	Location shown on site map _____		Areal extent _____
	Remarks _____		
D. Cover Penetrations			
	Applicable	N/A	
1.	Gas Vents	Active	Passive
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Good condition
	N/A		Needs Maintenance
	Remarks _____		
2.	Gas Monitoring Probes	Active	Passive
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Good condition
	N/A		Needs Maintenance
	Remarks _____		
3.	Monitoring Wells (within surface area of landfill)	Active	Passive
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Good condition
	N/A		Needs Maintenance
	Remarks <i>Well collapsed</i>		
4.	Leachate Extraction Wells	Active	Passive
	Properly secured/locked	Functioning	Routinely sampled
	Evidence of leakage at penetration		Good condition
	N/A		Needs Maintenance
	Remarks _____		
5.	Settlement Monuments	Located	Routinely surveyed
	Remarks _____		

E. Gas Collection and Treatment		Applicable	N/A
1.	Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs Maintenance Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping Good condition Needs Maintenance Remarks _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs Maintenance N/A Remarks _____		
F. Cover Drainage Layer		Applicable	N/A
1.	Outlet Pipes Inspected Remarks _____	Functioning	N/A
2.	Outlet Rock Inspected Remarks _____	Functioning	N/A
G. Detention/Sedimentation Ponds		Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____		
2.	Erosion Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	Outlet Works Functioning N/A Remarks _____		
4.	Dam Functioning N/A Remarks _____		

IX. GROUNDWATER/SURFACE WATER REMEDIES		Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		Applicable	N/A
1.	Pumps, Wellhead Plumbing, and Electrical Good condition All required wells properly operating Needs Maintenance N/A Remarks _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____		
B. Surface Water Collection Structures, Pumps, and Pipelines		Applicable	N/A
1.	Collection Structures, Pumps, and Electrical Good condition Needs Maintenance Remarks _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances Good condition Needs Maintenance Remarks _____		
3.	Spare Parts and Equipment Readily available Good condition Requires upgrade Needs to be provided Remarks _____		

C. Treatment System		Applicable	N/A
1.	Treatment Train (Check components that apply) Metals removal Air stripping Filters Additive (e.g., chelation agent, flocculent) Others Good condition Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually Quantity of surface water treated annually Remarks	Oil/water separation Carbon adsorbers	Bioremediation
2.	Electrical Enclosures and Panels (properly rated and functional) N/A Remarks	Good condition	Needs Maintenance
3.	Tanks, Vaults, Storage Vessels N/A Remarks	Good condition	Proper secondary containment Needs Maintenance
4.	Discharge Structure and Appurtenances N/A Remarks	Good condition	Needs Maintenance
5.	Treatment Building(s) N/A Chemicals and equipment properly stored Remarks	Good condition (esp. roof and doorways)	Needs repair
6.	Monitoring Wells (pump and treatment remedy) Properly secured/locked All required wells located Remarks	Functioning Needs Maintenance	Routinely sampled N/A Good condition
D. Monitoring Data <i>well collapsed see X1 C</i>			
1.	Monitoring Data Is routinely submitted on time		Is of acceptable quality
2.	Monitoring data suggests: Groundwater plume is effectively contained		Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. Monitoring Wells (natural attenuation remedy)			
Properly secured/locked	Functioning	Routinely sampled	Good condition
All required wells located	Needs Maintenance		N/A
Remarks			

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Cap installed in 1987 under RCRA closure LC is accomplished as site is within confines of fenced AFB with controlled access.

Groundwater monitored in LTM program

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

*Well is collapsed so cannot be sampled
Need new well to monitor soil-groundwater
input*

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

