



STATUS REPORT

LANDFILL MAINTENANCE AND MONITORING SITES 20, 21, AND 22

NAVAL AIR STATION FALLON, NEVADA

Barajas & Associates, Inc.
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Presentation Overview



- **Site Locations, History and Background**
- **Groundwater Monitoring Activities**
- **Landfill Inspection Activities**
- **Landfill Maintenance Activities**



Site Locations

Sites 20, 21, and 22 at NAS Fallon



History of Operations



IRP SITE NO.	SITE 20	SITE 21	SITE 22
SITE NAME	CHECKERBOARD LANDFILL	RECEIVER SITE LANDFILL	NORTHEAST RUNWAY LANDFILL
SIZE	26 ACRES	60 ACRES	18 ACRES
TIME OF OPERATION	1951 TO 1965	1965 TO 1980	1980 TO 1987
SOLID WASTES RECEIVED	85,000 TONS OF WET GARBAGE, TRASH, AND RUBBLE	96,000 TONS OF WET GARBAGE, TRASH, AND RUBBLE	60,000 TONS OF TRASH
LIQUID WASTES RECEIVED	1,400 GALLONS OF FUELS, WASTE OIL, AND HYDRAULIC FLUID	1,000 GALLONS OF FUELS, WASTE OIL, AND HYDRAULIC FLUID	NONE
WASTE DISPOSAL METHODS	TRENCHES	TRENCHES AND BURNING	TRENCHES

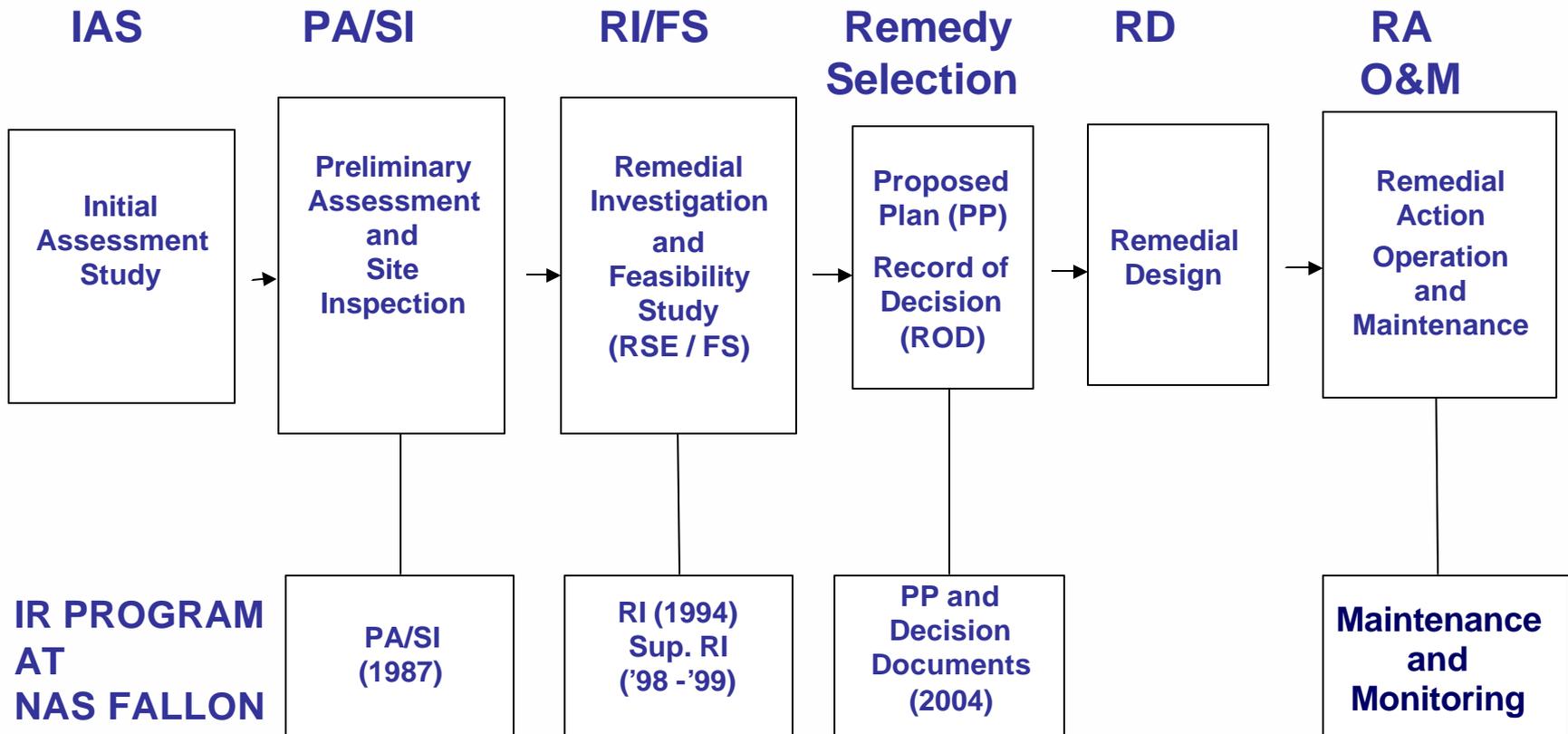


Physical Setting



- Regional topography is relatively flat and all three landfills are sparsely covered with native vegetation.
- Annual precipitation is about 5 inches per year.
- Groundwater is present under unconfined conditions in the shallow alluvial aquifer at depths ranging from 3 to 11 feet bgs. Flow is to the southeast at a gradient 0.001 to 0.002.
- Clay aquitard present at about 20' bgs.

CERCLA Process and IR Program



Completed for Sites 20, 21, and 22



Site Investigation and Enforcement Activities



- PA/SI (1987) included records search and site inspection. Soil and groundwater testing recommended.
- RI (1994) included groundwater test holes and monitoring wells for soil/ groundwater sampling.
- Supplemental sampling (1998 – 1999) included direct-push soil and groundwater sampling.
- March 2003 field event included magnetic survey, direct-push soil and groundwater sampling and aquifer testing.
- Site investigation activities showed that residual concentrations of compounds of concern at the sites did not pose a threat to human health or the environment.

Previous Site Investigation Summary



ORGANICS AND METALS PREVIOUSLY DETECTED IN SOIL AND GROUNDWATER

Site 20

- TPHP (purgeable), TPH-E (extractable)
- VOCs: bromoform, methylene chloride, chloromethane
- SVOCs: bis(2-ethylhexyl)phthalate*
- Metals: consistent with background

Site 21

- TPHE, JP-5, Heavy Fraction/Oil
- VOCs: acetone, ethylbenzene, xylenes, methylene chloride, TCE, 1,1-DCE, 1,1,1-TCA, TCF, 1,2,4-TCB
- SVOCs: bis(2-ethylhexyl)phthalate, butylbenzylphthalate
- Metals: consistent with background

Site 22

- TPHE, JP-5, purgeable
- VOCs: carbon disulfide, ethylbenzene, toluene, xylenes, methylene chloride, TCE, 1,1-DCA, 1,1-DCE, dichlorodifluoromethane, trichlorofluoromethane
- SVOCs: bis(2-ethylhexyl)phthalate*, di-n-butylphthalate, naphthalene
- Metals: consistent with background

Note:

* Considered to be the result of laboratory contaminants

KEY:

Brown – Exceeded Regulatory Action Level in one or more soil samples (NDEP Guidance)

Blue – Exceeded Regulatory Action Level in one or more groundwater samples (EPA Region 9 tap water PRGS or MCLs)

Green – Exceeded Regulatory Action Level in one or more soil and groundwater samples (NDEP Guidance)



Proposed Plans & Final Decision Documents



Proposed Plans were presented in July 2004 for Public Comment.

***Limited Action* was identified as the preferred cleanup alternative to limit human and ecological exposure to contaminants remaining in soil and groundwater at site by:**

- Implementation and maintenance of institutional controls.
- Mitigate the potential for surface water ponding and infiltration by selective regrading to address waste consolidation/settlement, cover exposed wastes, remove topographic low points, and improve drainage.
- Reestablish a vegetative cover in disturbed areas of the site.

Final Decision Documents Completed in September 2004



Components of Limited Action



- **Institutional Controls (Land Use Controls)**
 - **Groundwater Monitoring**
 - **Regrading of the Landfill**
 - **Repairing the Existing Soil Cover by Placing Native Fill in Selected Areas**
 - **Revegetating the Regraded Areas**
- **Maintaining the Landfill for a 3-Year Period**

2007 Groundwater Monitoring Program Activities



Unusable Wells Abandoned

- MW-34 and MW-35 (Site 20) run over by grader
- MW-12U (Site 21) dry and silted in
- BAT-6-B (Site 22) ¾"-diameter casing

New Wells Installed

- 5 New Wells at Site 20 (for a total of 9)
- 5 New Wells at Site 21 (for a total of 8)
- 4 New Wells at Site 22 (for a total of 6)

Groundwater Sampling and Analysis

- Total Petroleum Hydrocarbons (TPH) - EPA 8015B
- Volatile Organic Compounds (VOCs) - EPA 8260B
- Semivolatile Organic Compounds (SVOCs) - EPA 8270C
- Total Dissolved Solids (TDS) - EPA 160.1



Unusable Groundwater Monitoring Wells Abandoned at Site 20



New Groundwater Monitoring Wells Installed at Site 20



Current Groundwater Monitoring Network Site 20



Unusable Groundwater Monitoring Wells Abandoned at Site 21 and Site 22



New Groundwater Monitoring Wells Installed at Site 21 and Site 22



Groundwater Monitoring Program Sites 21 and 22



February/March 2007 Groundwater Monitoring Results



- **Depths to groundwater (about 3 to 12 feet bgs) and groundwater flow direction (generally southeast) consistent with historical observations.**
- **The majority of wells were suitable for low-flow (minimal drawdown) sampling methods. However, low-flow sampling could not be performed at wells MW-37, MW-45, PW-03, and BA21-MW01 due to slow recovery (standard methods used at these wells).**
- **TDS concentrations in groundwater samples ranged from 127 to 53,100 µg/L with an average TDS concentration of 22,800 µg/L, well below the Project Action Limit of 500,000 µg/L.**
- **TPH, VOCs, and SVOCs were not detected in any of the 9 wells at Site 20, 3 wells at Site 21, and 3 wells at Site 22.**
- **TPH, VOCs, and/or SVOCs were detected in 5 wells at Site 21 and 3 wells at Site 22.**



Preliminary Laboratory Results - Organics

February/March 2007 Groundwater Sampling Event



Site	Well ID	EPA Method	Constituent	Result (ug/l)	Project Action Limit
21	MW-12L	8015B	Diesel Range Organics (DRO)	240	1000
			Residual Range Organics (RRO)	190	
		8260B	Toluene	1.1	720
	MW-94	8270C	Bis (2-ethylhexyl)Phthalate	38	4.8
	BA21-MW03	8260B	Toluene	0.62	720
	BA21-MW04	8015B	Diesel Range Organics (DRO)	97	1000
	BA21-MW05	8260B	Toluene	7.2	720
22	BA22-MW01	8015B	Diesel Range Organics (DRO)	90	1000
	BA22-MW02	8015B	Diesel Range Organics (DRO)	350	1000
			Residual Range Organics (RRO)	110	
	BA22-MW02 (duplicate)	8015B	Diesel Range Organics (DRO)	370	1000
			Residual Range Organics (RRO)	100	
	BA22-MW03	8015B	Diesel Range Organics (DRO)	2500	1000
			Residual Range Organics (RRO)	340	

Note: All results pending third part data validation.



TPH Detected at Sites 21 and 22

March 2007



OBJECTIVES

- **Regrading of the Landfill**
- **Repairing the Existing Soil Cover by Placing Native Fill in Selected Areas**
- **Revegetating the Regraded Areas**



Landfill Maintenance Activities

Repair of Soil Cover Using Imported Fill



Landfill Maintenance Activities



Stockpiled soil at borrow area southeast of Site 21 and Site 22 (view to southwest from BA21-MW05)



Landfill Maintenance Activities



Fill material imported for regrading at west portion of Site 21 (view to northwest)



Landfill Maintenance Activities



Area of archaeological significance in southeast portion of Site 22 (view to the west)



Landfill Maintenance Activities



Bulldozer regrading central portion of Site 21 (view to north)



Landfill Maintenance Activities



Southwest portion of Site 22 regraded to improve drainage (view to southwest)



REVEGETATION OF GRADED AREAS

- Planned for December 2007
- Coordinated with NAS Fallon Natural Resources Specialist

