

National Aeronautics and  
Space Administration

Lyndon B. Johnson Space Center  
**White Sands Test Facility**  
P.O. Box 20  
Las Cruces, NM 88004-0020



January 30, 2013

Reply to Attn of: RE-13-015

New Mexico Environment Department  
Attn: Mr. John E. Kieling, Chief  
Hazardous Waste Bureau  
2905 Rodeo Park Drive East, Bldg 1  
Santa Fe, NM 87505

Subject: NASA WSTF 600 Area Monitoring Network – NMED Modifications

The “Evaluation of the 600 Area Monitoring well Network” report (report) was submitted by the National Aeronautics and Space Administration (NASA) to the New Mexico Environment Department (NMED) on October 30, 2012. NMED approved this report with modifications in a letter dated January 16, 2013. The modifications comprised two NMED comments that are addressed in Enclosure 1. A modified copy of page 7 of the report is provided as Enclosure 2. The response is required by January 31, 2013.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations. If you have any questions or comments concerning this submittal, please contact Tim Davis at 575-524-5024.

*for* 

Radel Bunker-Farrah  
Chief, Environmental Office

2 Enclosures

cc:  
Mr. Dan Comeau  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, NM 87505

## **NMED Modifications:**

### **1. Table 1, Summary of 600 Area Groundwater Monitoring Network, pages 6 through 8 inclusive:**

**NMED Comment:** Three wells are recommended for plugging and abandonment by the Permittee (600-C-210, 600-D and NASA 7). In addition, three other wells (100-D-176, 600C-173 and BLM-3-182) are recommended for detailed evaluation due to conflicting video log reports or the presence of significant corrosion and rust. The Permittee has not indicated a specific time-frame for abandonment or evaluation of the wells but has suggested that the results of the upcoming (early 2013 commencement) dye tracer testing should be considered in terms of deciding whether or not additional monitoring wells are needed in the 600 Area. Provide a letter to NMED which includes a proposed schedule (based on the predicted length of time needed for completion of tracer testing) for plugging and abandonment of 600-C-210, 600-D and NASA 7 and evaluation of 100-D-176, 600-C-173 and BLM-3-182. Provide the proposed schedule by **January 31, 2013**.

## **NASA Response:**

The following schedule is proposed for the plugging and abandonment of groundwater monitoring wells.

- 600-C-210: prior to December 31, 2013
- 600-D (Westbay): prior to December 31, 2013
- NASA 7: prior to December 31, 2013

The following schedule is proposed for the detailed evaluation on the condition of groundwater monitoring wells.

- 100-D-176: prior to July 31, 2013
- 600-C-173: prior to July 31, 2013
- BLM-3-182: prior to July 31, 2013

In the assessment of the 600 Area groundwater monitoring well network presented by NASA (NASA, 2012; Section 2.3), several investigative elements were considered to be adequately addressed by the current monitoring system in the vicinity of the 600 Area Closure. It was stated that an evaluation for the need of any additional wells will be made following the performance of NASA's groundwater tracer test study at WSTF. Due to the volume of permit-required activities currently ongoing at WSTF and uncertainties associated with fiscal year 2013 federal funding, the groundwater tracer test study is currently pending receipt of fiscal year 2013 funding and prioritization of activities. No schedule is currently available. NASA believes that the current 600 Area monitoring well network provides effective groundwater monitoring (NASA, 2012).

Reference:

NASA. Evaluation of the 600 Area Groundwater Monitoring Well Network. National Aeronautics and Space Administration (NASA) Johnson Space Center (JSC) White Sands Test Facility (WSTF), October, 2012.

**2. Table 1, Summary of 600 Area Groundwater Monitoring Network, page 7:**

**NMED Comment:** The entries in the "Well Condition" and "Notes Relative to Well Condition" columns of the table for well NASA 2 appear to be incorrect since a well that has a 300 foot screened interval would not be appropriate to monitor perched water near the 600 Area Closure. By **January 31, 2013**, provide a corrected page 7, if NMED's observation is correct.

**NASA Response:**

The screened zone in well NASA 2 extends between 90 to 390 feet below ground surface (bgs). Perched water in the vicinity of this well would be anticipated at the andesite bedrock surface at 150 feet bgs based on the occurrence of perched groundwater observed at other proximal locations (e.g. soil borings 600-SB-5 [converted to well 600-G-138] and 600-SB-8). It remains possible that the primary source of water to this well is from the perched zone on top of the bedrock surface given the low hydraulic conductivities associated with this andesite unit.

NASA believes an evaluation is required to determine whether a significant component of groundwater in this well is derived from the perched zone. If so, the well may be able to be potentially utilized for the extraction of perched water. This activity is currently being set up for nearby well 600-G-138. If well NASA 2 cannot be feasibly utilized for the removal of perched water based on the results of the evaluation (to be performed by July 31, 2013), it is recommended that the well will be plugged and abandoned (by December 31, 2013). A revised version of page 7 is provided as Enclosure 2 that removes the reference to "monitoring" for well NASA 2 and identifies the potential use of the well as a perched water extraction well.

See Attachment 2 for a corrected page 7.

NASA White Sands Test Facility

Table 1 Summary of 600 Area Groundwater Monitoring Well Network									
Well ID and Well Location	Well Type	Installation Date	Total Depth Well (ft bgs)	Depth to Bedrock/ Depth to Groundwater (ft bgs)	Groundwater Monitoring Zone or Westbay Port Depths (ft bgs)	Current Groundwater Sampling Schedule	Well Condition	Notes Relative to Well Condition	Assessment for Continued Monitoring
600-E Adjacent to northwest side of 600 Area Closure	Westbay MP38 multiport monitoring well (open borehole)	October 1997	690	154 Andesite/ 274 Groundwater	280 440* 535* 670*	Annual (Uppermost sampling port)	Poor – the lower three sampling zones are inaccessible (last sampled August 22, 1999)	Replacement monitoring well recommended for vertical delineation of the 600 Area	<b>Yes</b> Lower zones (if made accessible through a well replacement) show improved water yield over well 600-D
600-G-138 Adjacent to east corner of 600 Area Closure	Conventional 4" ID PVC monitoring well	October 2011	148	146 Andesite/ 145 Groundwater	138 – 148	Quarterly	Good – recently installed Schedule 80 PVC	---	<b>Yes</b> This well targets the perched water at the 600 Area Closure on top of andesite bedrock
BLM-3-182 West and downgradient (150 ft) of west corner of 600 Area Closure	Conventional 4" ID monitoring well Composed of PVC to 162' and stainless steel to 208'	February 1987	208	160 Andesite/ 168 Groundwater	182 – 203	Annual	Poor – significant corrosion and rust	A detailed well evaluation is required	<b>Yes</b> Downgradient location relative to 600 Area Closure and 100/200 lagoons
NASA 2 Northwest of northwest side of 600 Area Closure	Conventional 4" ID PVC well	July 1984	390	150 Andesite/ 185 Groundwater	90 – 390	This well is monitored for groundwater depths only due to extended screen length	Moderate – will be evaluated for potential perched groundwater evaluation based on screen interval	<b>Potential perched groundwater well</b> —a detailed well evaluation is required	<b>No</b> This well has not been used for sampling due to the 300' <b>screened interval but may have potential use for perched water extraction</b>
NASA 4 East and upgradient (400 ft) of east corner of 600 Area Closure	Conventional 4" ID monitoring well Composed of PVC to 136' and stainless steel to 171'	March 1985	171	125 Limestone/ 136 Groundwater	146 – 166	Annual	Moderate	---	<b>Yes</b> Represents the closest upgradient monitoring well for the 600 Area Closure

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