

F A X



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Date: December 15, 1999

To: Steve Pullen - NMED

Reference: 602

From: Patrick Corser - MW

Charged Amt:

Fax No. 505-827-1561

No. of Pages:
(including cover)

Subject: Preliminary Draft of Proposed Monitoring Program

Steve,

Attached is a preliminary outline of our proposed monitoring program. We would like to discuss the framework with you and then we will fill-in the details. Please call after you have had a chance to review.

I reminded Jim Bonner about the laboratory test results for the Lower Dockum samples. He is reviewing his files for the test results.

Leah Wolf has sent you a draft of the revised sections of the waiver document, based on the last round of modeling. If you concur with this text, then we will finalize the waiver document. Jim Bonner is prepared to modify Section 3 of the permit application based on the information presented in the waiver document.

Regards,

A handwritten signature in black ink, appearing to be 'PC' or similar initials, written over a printed name.

Patrick Corser

cc: Dale Gandy 505-396-6887

If you do not receive all pages, or if there are any problems with this transmission, please call 970-879-6260

PRELIMINARY DRAFT
Framework for Monitoring Program
at the
Triassic Park Facility

DRAFT

Objective:

Determine the installation and monitoring requirements for the vadose zone sumps and vadose zone monitoring wells.

Facilities to be monitored:

Landfill (Phase IA) and evaporation pond

Vadose Zone Monitoring Components:

1. Lined vadose zone sumps beneath floor collection trench and sumps
2. Vadose zone wells around the perimeter of facilities

Monitoring Frequency:

Facility	Landfill		Evaporation Pond	
	Vadose Zone Sump	Vadose Zone Wells	Vadose Zone Sumps	Vadose Zone Wells
Operations	Daily	Monthly	Daily	Monthly
Closure	Daily	Monthly	NA	NA → Monthly
Post-Closure	Semi-annual	Semi-annual	NA	NA → Semi-Annual

The Greenwood suggests monthly.

Location for Wells:

Due to the very long travel times that have been calculated for flow through either the upper or lower Dockum, vadose zone monitoring wells at the perimeter of the facility are not going to be effective at detecting a leak from either the landfill or the evaporation pond. Therefore, it is proposed to install vadose zone wells adjacent to the sumps of the facilities, where leaks are most likely to occur.

- Too difficult to install angle holes & muds
- I want vertical boreholes.
- Proposed locations may not monitor entire facility.
- MAY need extra wells.

See attached for suggested locations

Expected Sources for Water in the Vadose Zone Sumps or Wells

1. Rainwater – direct infiltration to wells or sumps (through fractures or preferred channels) *poorly constructed wells.*
2. Rainwater – after leaching through Upper Dockum sediments
3. Leachate – direct infiltration to wells or sumps (through fractures or preferred channels)
4. Leachate – after leaching through Lower Dockum sediments
5. Consolidation water from the prepared subgrade or GCL.
6. facility water supply line leak.
7. flow waste line leaks.
8. water collected at contact between alluvial material & U. Dockum

DRAFT

Required Baseline Characterization of Potential Vadose Zone Sumps or Wells

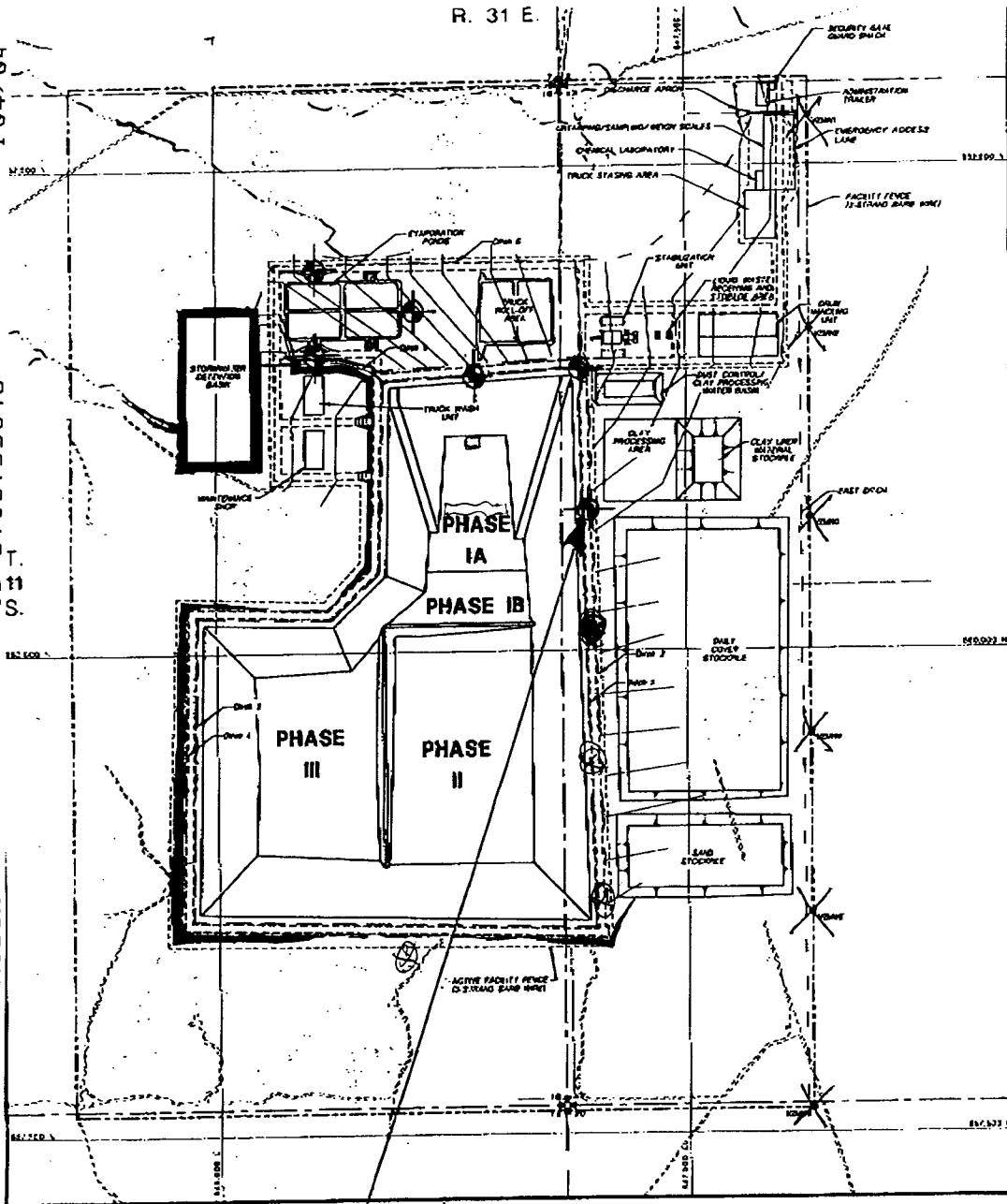
- NEED to sample for the latest list of parameters for both systems

- Rainwater as collected onsite *Storm water Detection Ponds (Lined)*
 - Parameter list to be determined (w)
 - Indicator parameters identified
- Rainwater after leaching through Dockum - synthetic leaching test *OK. NEVADA*
 - Parameter list to be determined
 - Indicator parameters identified
- Leachate - as soon as available from landfill and evaporation pond
 - Parameter list to be determined *- IN SUMP'S*
 - Indicator parameters identified *- How often is this tested? yearly*
 - Tests to be updated yearly *- PLUS Leachate*
- Leachate after leaching through Dockum - synthetic leaching test *- ?*
 - Parameter list to be determined *PROBABLY best to NUC*
 - Indicator parameters identified *Appendix IV. PLUS*
 - Tests results to be updated yearly *STANDARD GW parameters pH/DO*
- Consolidation Water from Subgrade/GCL
 - Parameter list to be determined
 - Indicator parameters identified *SOUNDS GOOD*

- water supply line break
- waste fluid lines
- consult to mention this in an appendix of Reporting Requirements.

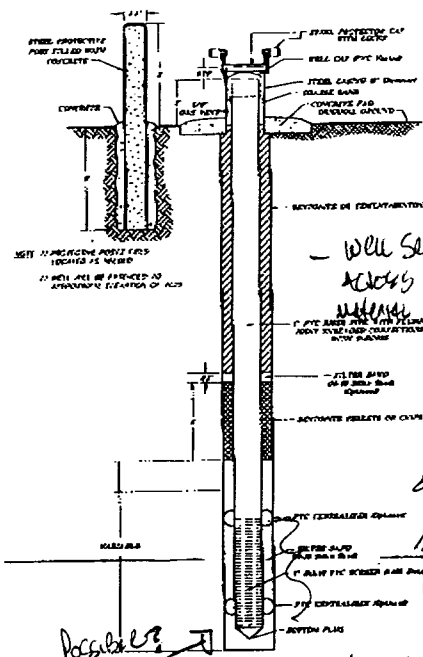
Monitoring

- Probing for Liquids:
 - Vadose zone sumps *- consider a pressure or electrical conductivity probe to ID presence of fluid.*
 - Liquid not present - no action
 - Liquid present - resample
 - Liquid not present - return to normal monitoring
 - Liquid present - test for indicator parameters (see above) *NOT ABOVE AND LIST OF INDICATOR PARAMETERS. See*
 - Correlate results to one of the five baseline samples listed above.
 - If results indicate rainwater or consolidation water - no action
 - If results indicate leachate - implement contingency plan
 - Vadose zone wells *STATISTICAL ANALYSIS See WLS App.* *Section 6. WHICH PARTS PERTAIN? NEED MORE. SWAP POND 6:3:5-3*
 - Liquid not present - no action *- NOTHING ON LAND FILL LEAK*
 - Liquid present - resample
 - Liquid not present - return to normal monitoring
 - Liquid present - test for indicator parameters
 - Correlate results to one of the first four baseline samples listed above (consolidation water not applicable)
 - If results indicate rainwater - no action *POSSIBLE PROBLEM w/ well.*
 - If results indicate leachate - implement contingency plan



INDICATES NEW LOCATION FOR VADOSE ZONE MONITORING WELLS

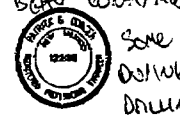
TYPICAL VADOSE ZONE MONITORING WELL INSTALLATION DETAIL



- NOTES
- FOR GENERAL NOTES AND LEGEND INFORMATION SEE DRAWING No. 1.
 - TOPOGRAPHY FROM AERIAL SURVEYS PERFORMED AUGUST 1987 BY KODGLE AND FOLKS ENGINEERING.
 - THE VADOSE ZONE MONITORING WELLS WILL BE EXTEND TO ELEVATION 4030, APPROXIMATELY.

Possible Sump

10' W/O LOWER DRAIN 5' SLOT BELOW CONTACT.



PROFESSIONAL ENGINEER'S STATEMENT
I, Patrick G. Carson, State of Maryland, hereby certify that I am a duly licensed Professional Engineer and that the information presented herein is true and correct to the best of my knowledge and information.

Date: Patrick G. Carson, PE, P.E. 2038

LEGEND

- EXISTING CONTOUR
- REGRADED CONTOUR
- VADOSE ZONE MONITORING WELLS
- FACILITY AND ACTIVE FACILITY FENCES
- 15-Strand Bare Wire

SEE PAGE OF LINE FOR BOTH PLACES

DRAFT

may NOT extend screen length to near surface?

UPPER 15-11

LOWER 15-11 DOWN



Not For Construction

NO.	REVISION	DATE	BY	CHKD.	APP'D.
1	ISSUED FOR CONSTRUCTION	12/15/99	PKG	PKG	PKG
2	REVISED	12/15/99	PKG	PKG	PKG
3	REVISED	12/15/99	PKG	PKG	PKG
4	REVISED	12/15/99	PKG	PKG	PKG

TRIASSIC PARK WASTE DISPOSAL FACILITY

DRAWING TITLE
FACILITY LAYOUT

Project: P. G. Carson
 SCALE: AS SHOWN
 DRAWING NO.: 12338

12/17/99

Comments regarding the Proposed Monitoring Program (annotated and abbreviated due to lack of time)
This should not be construed to constitute all additional needs of the monitoring program.

Monitoring Frequency

- ✓ Need evaporation pond wells to have the same frequency as during closure and post-closure at landfill.
- ✓ Need commitment to increase frequency when fluid appears in monitoring points.

Location of Wells

- ✓ Need a technical justification for well spacing and number.
- ✓ Need clarification whether permit application is for landfill Phase 1A or Phase 1A & 1B. Regardless, we need technical justification as to why a well is not needed in a southeasterly direction.
- ? - Need well locations to correlate with the U/L Dockum contact contour map submitted earlier.
- Need justification for not monitoring the contact between the alluvial material and Upper Dockum. It is perceived as a significant accumulation point/horizon.

Expected Sources of Water

- Please include the facility water supply, facility fluid waste lines and the contact between the alluvial materials and the Upper Dockum.

Baselines/Background

- ? - Need to include at a minimum the indicator parameters in the attached list.
- ? - Need a commitment to test for a complete Appendix IX when ever fluid first appears at any monitoring point.
- ✓ Need the synthetic leaching test specified. Is it the Meteoric Water Mobility Procedure provided earlier?
- Need all non-leachate fluid indicator parameters to include the major anions and cations in the provided list and a commitment to report periodically using trilinear (Piper) diagrams.
- If non-leachate waters enter monitoring points, we need a commitment to measure to sufficiently low detection limits to measure any amount of leachate.

Monitoring

- Neither the Contingency Plan (Section 6) nor the Response Action Plan address what happens when fluids appear in the vadose monitoring points. We need to decide where the response should be detailed and the need for it to be cross referenced in the other portions.
- If fluid appears in a well, we need a commitment to use a neutron probe to determine the stratigraphic source of the fluid.

Well Construction

- Need wells 10 feet into Lower Dockum
- Need assurance during well drilling of depth of contact
- Need 5 foot sump at bottom of well and screen interval to span the contact.
- Need commitment to construct wells with appropriate materials.
- Need wells sealed across contact of alluvial material and Upper Dockum.

Contingency Plan (Section 6 from application) This plan primarily addresses surface spills, explosions and fires and does not mention what would happen if the vadose monitoring points show a release. A section on the evaporation pond does address a significant loss of fluids but nothing regarding the sumps. Please propose an appropriate location for this information.

- Subsection titled "Releases to the Environment", fifth bullet references appropriate levels for contaminants of concern. We prefer that the Plan specify these levels as "within a statistically significant range relative to background concentrations as determined by NMED."

Response Action Plan This plan makes no reference to what would happen if fluids appeared in the vadose monitoring points. Similar but more drastic contingencies need to be outlined somewhere in the application should leachate appear at these points.

Need the following issues addressed in the Monitoring Program

- **Conceptual Site Model**
- **Data Quality Objectives**
- **Quality Assurance Project Plan**



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PETER MAGGIORE
SECRETARY

FAX COVER SHEET

DATE: 12/17/99
TO: PAT CORSER
COMPANY: MW
FAX NO.: 970-879-9048
TELEPHONE: _____

MESSAGE: Response to Proposed Monitoring Program.
Pat.

I've tried to capture our conversation yesterday. Please
and 1. Comments 2. WCS Permit w/ SHE plan &
List of indicator parameters 3. Medicine Water Mobility Procedure
4. Example "Piper" diagrams. w/ constituents X Steve.

FROM: Steve Power NO. OF PAGES: 14
(Including cover page)

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HAZARDOUS & RADIOACTIVE MATERIALS BUREAU

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