

STATE OF NEW HAMPSHIRE  
INTER-DEPARTMENT COMMUNICATION

DATE: September 16, 2009  
AT(OFFICE): P&DRS



**FROM:** Wayne Wheeler, P.E.  
Permitting & Design Review Section

**SUBJECT:** Stage 1 Phase 1 Anchor Trench Repairs/NCES/Bethlehem/  
DES-SW-SP-03-002

**TO:** Michael E. Guilfooy, P.E., Administrator, SWMB

On Tuesday, September 9, 2009, Paul Gildersleeve and I visited the NCES landfill in Bethlehem to attend a Leachate Management Improvements construction meeting. Prior to the meeting, we were given a tour of the facility by Kevin Roy. Picture 1 shows the amount of soil that has been removed from the area between the old leachate loadout area and MW 402U & L.



**Picture 1.** This picture shows the area to the north of Stage 1 where the leachate loading tanks and area were formerly located.

Kevin then proceeded to show us the area near the Stage 1 Phase 1 downchute. While removing the 36-inch culvert, Kevin saw landfill gas coming from the direction of the Stage 1 Phase 1 anchor trench. Upon removing soil from approximately 200 feet of anchor trench and exposing the geomembrane cap, Kevin noted that the cap was badly deteriorated. It had holes in it and the cap was not welded to the liner in this area.

He explained that his intent was to have CMA prepare a plan to replace the existing cap and to weld it to the liner.









**Picture 2.** This picture is looking up (south) the Stage 1 Phase 1 downchute. The excavated anchor trench is to the right.



**Picture 3.** This picture is looking north at the Stage 1 Phase 1 anchor trench. Note arrow pointing out hole in geomembrane cap.











**Picture 4.** This picture is looking north towards MW 913M. The open trench is where the 36" culvert connecting the Stage 1 Phase 1 down chute to detention pond 3 was located.

Prior to going to the landfill, I had plotted secondary leachate flows versus rainfall for Stage 1 Phases 1 through 4, State 3, and Stage 4 Phase 1 (which includes flows from Stage 2) for 2007 through the present.

On April 25, 2007 Casella Construction along with a crew from Terafix lined a small area between the cap down chute and the culvert to Pond #3. The 60-mil liner was welded to the cap at the Stage 1 Phase 1 anchor trench and was booted to the culvert such that all water flowing through the cap down chute would be drained through the culvert. In addition, the low level orifice for the outlet structure to Pond #3 was blinded by silt, resulting in a backup of water through the culvert and further saturation of soil adjacent to the anchor trench. Both of these conditions were thought to have raised local groundwater levels to an elevation above the anchor trench, resulting in a flow of clean water into the Phase 1 secondary collection system.

As shown the Stage 1 Leachate Flow charts (esp. Phases 1 and 4), secondary leachate flows appear to have substantially decreased following the repairs.

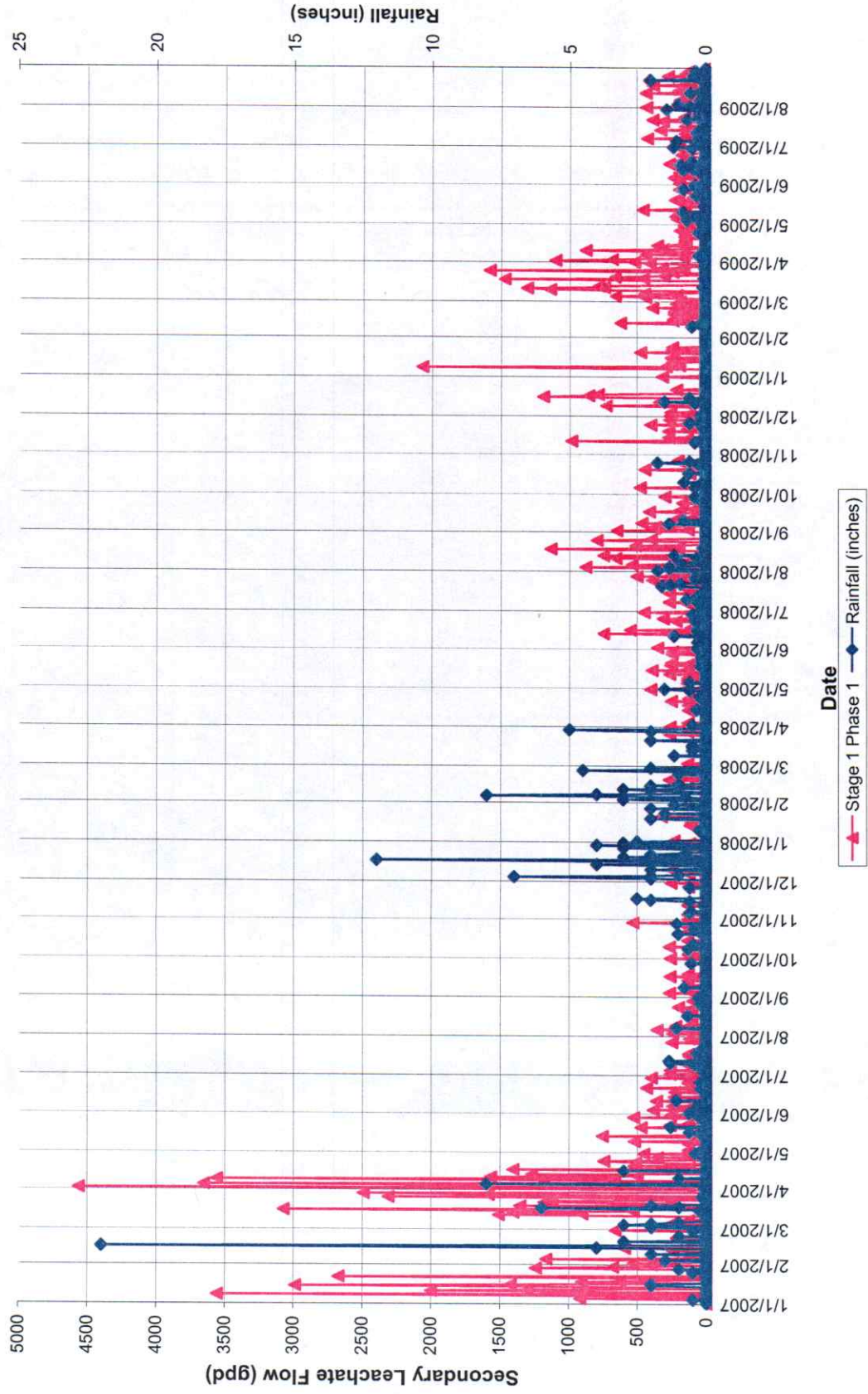
As shown on the attached charts, Stage 1 secondary flows appear to be influenced by either rainfall events or runoff. In addition and as shown on the attached charts, there appears to be a relationship between total VOCs measured at MW B-913M and secondary leachate flows. I have also plotted Total VOCs for each of the Stage 1 phases.





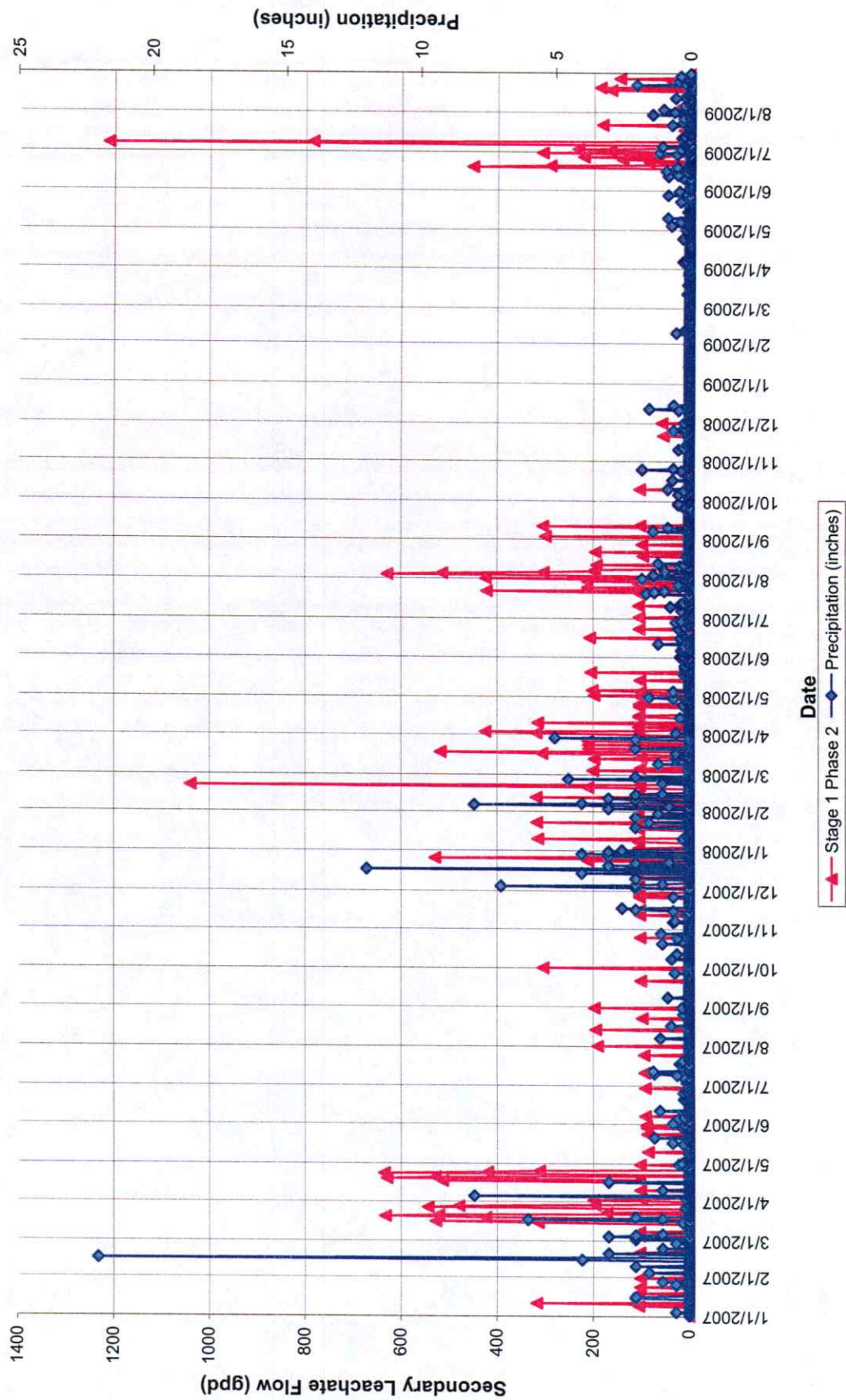


# NCES Secondary Leachate Flows



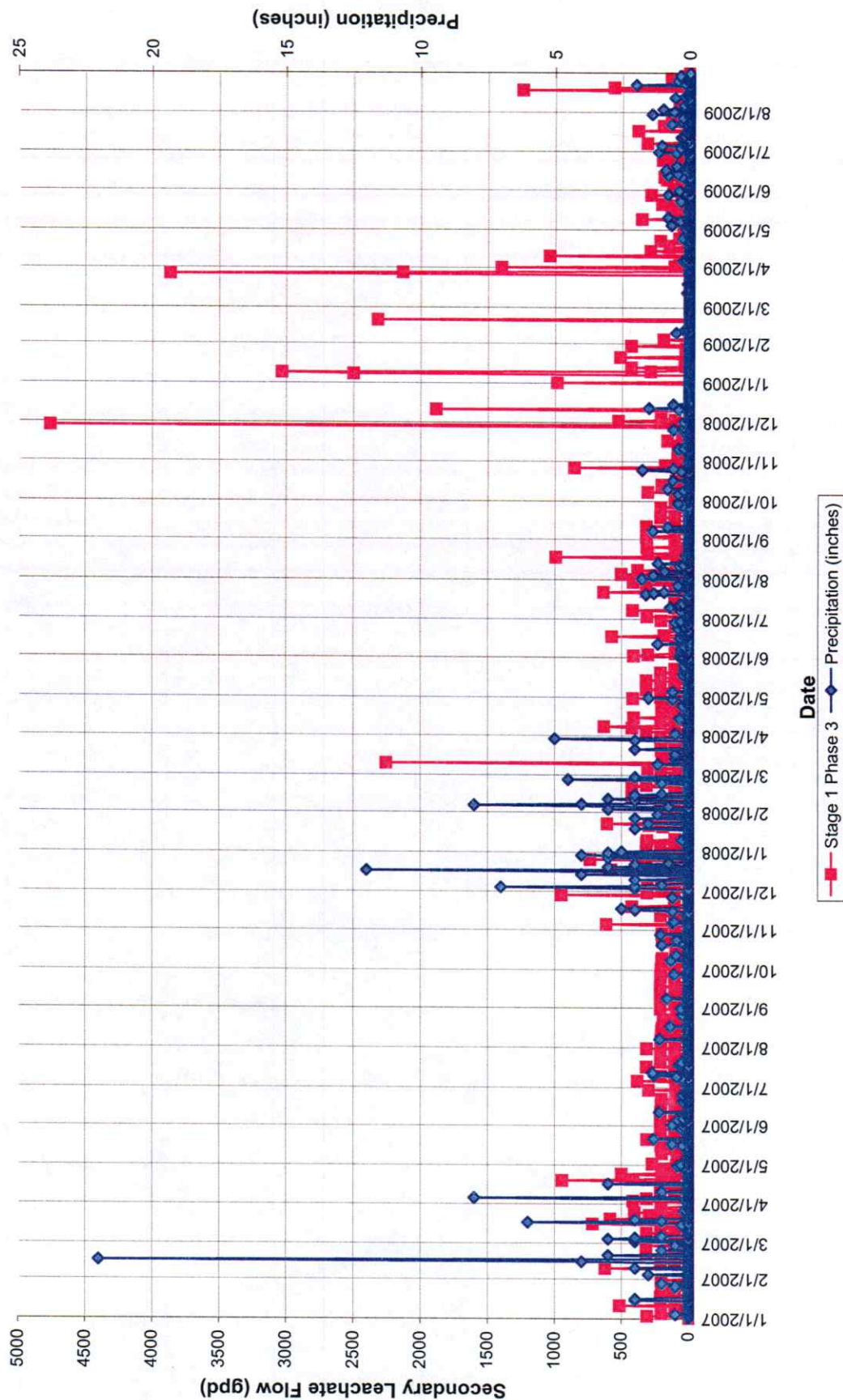


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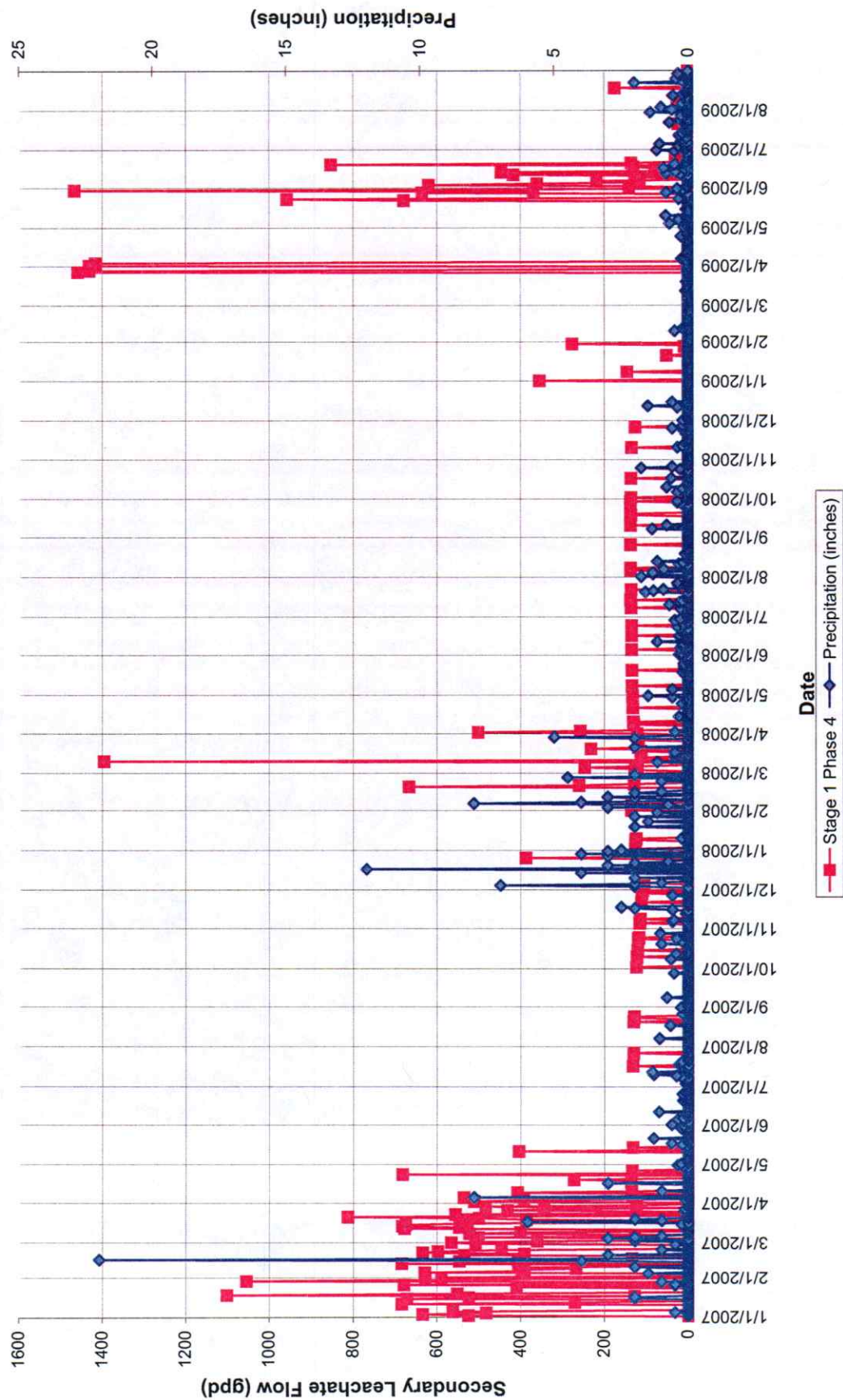


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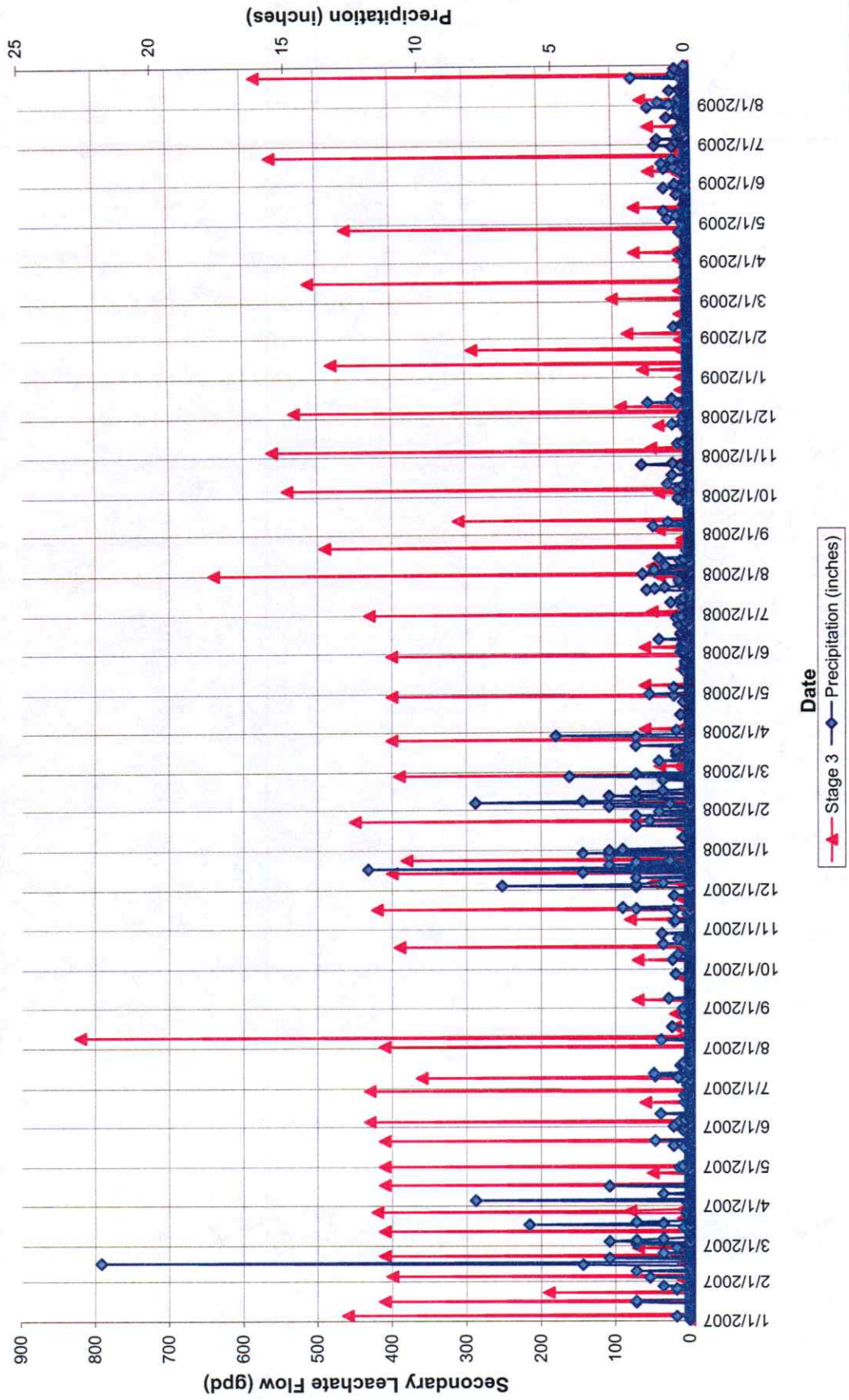


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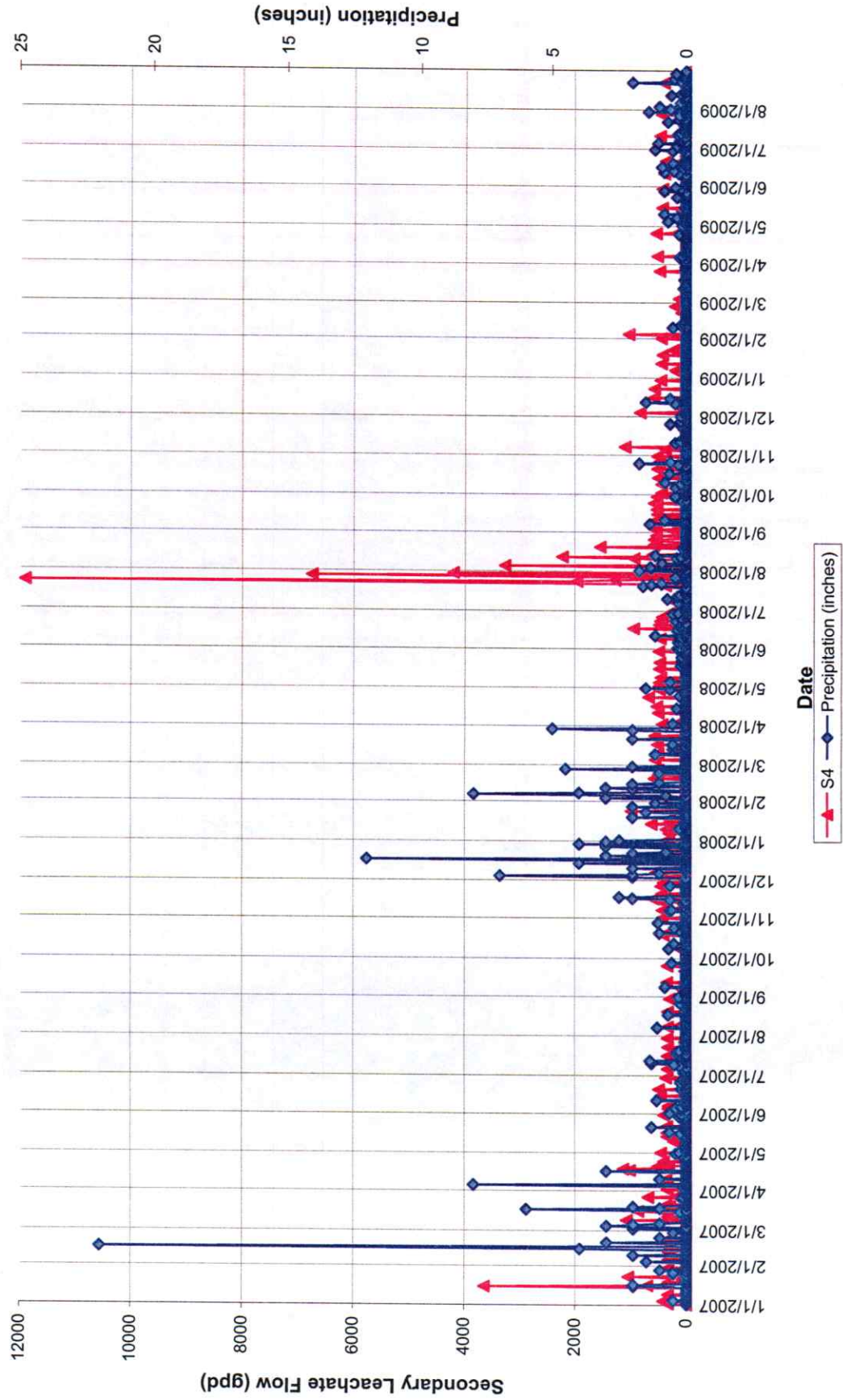




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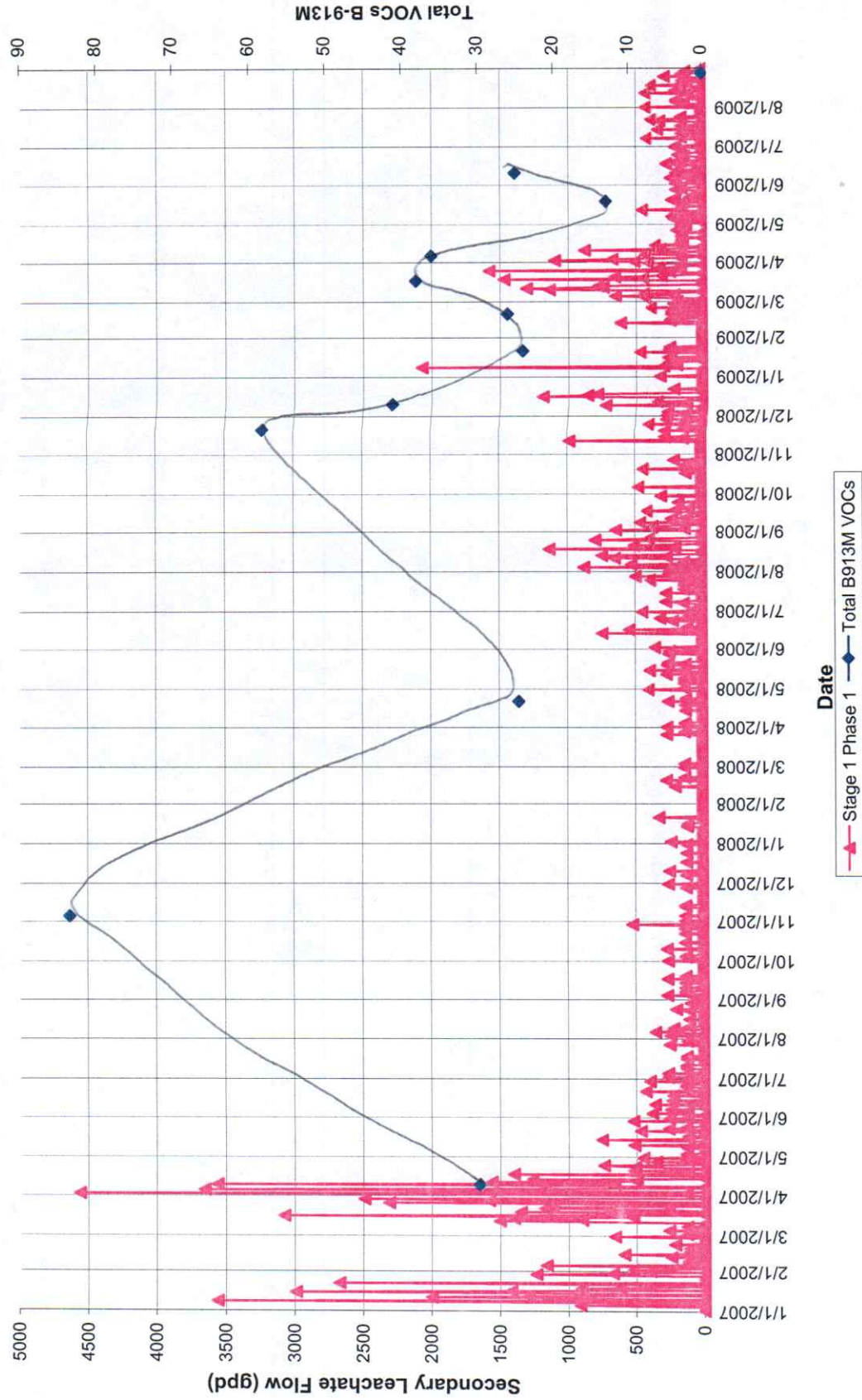


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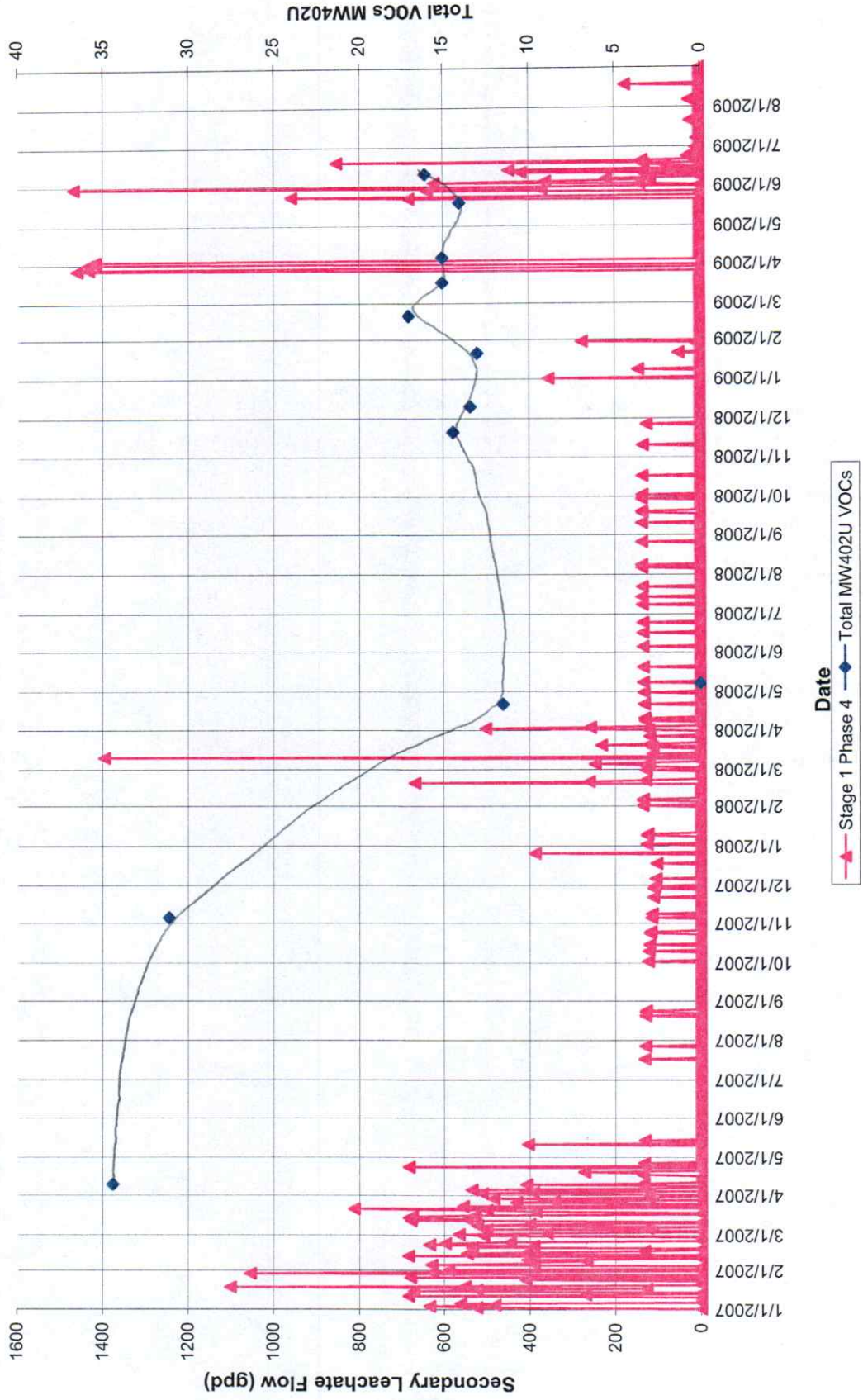




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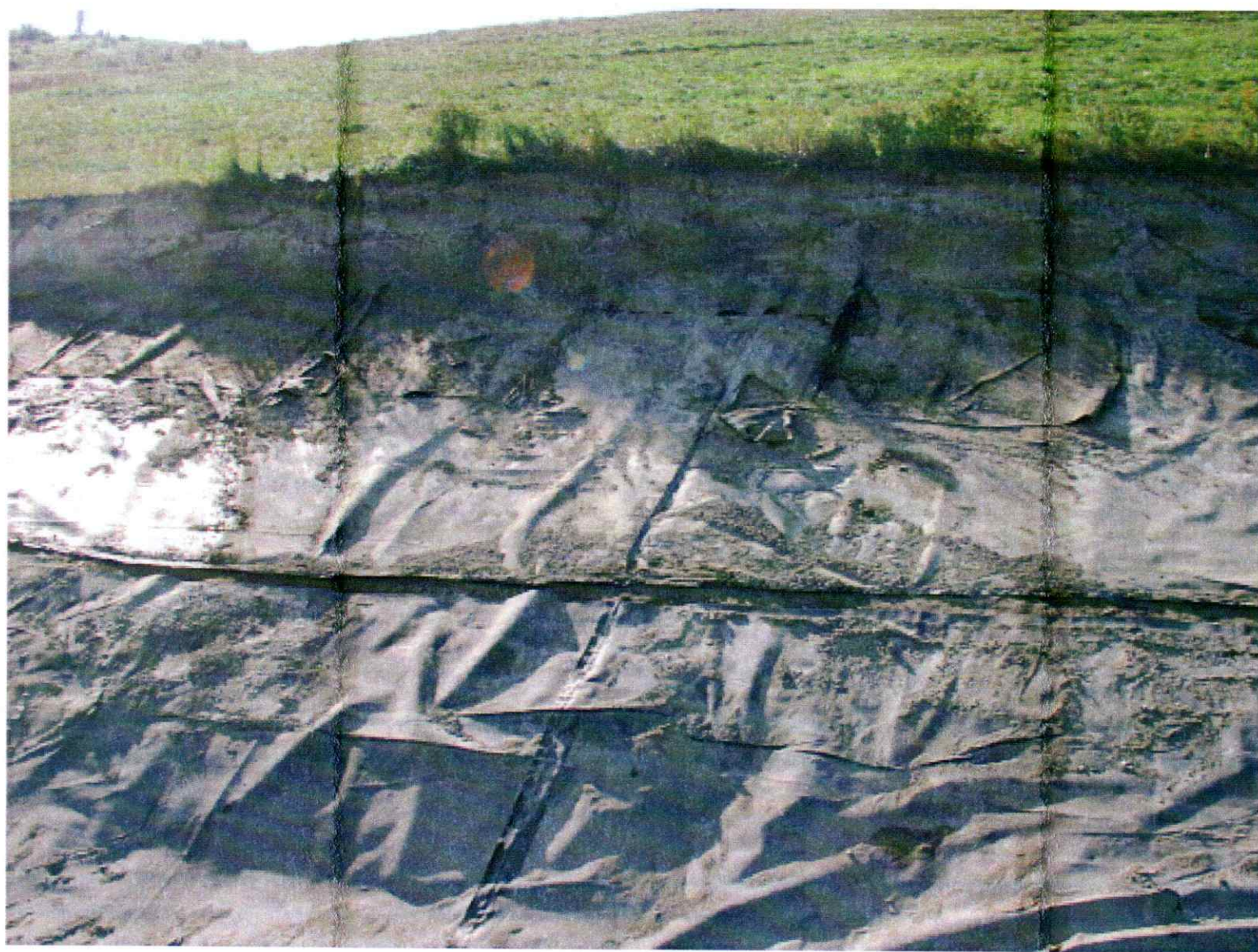
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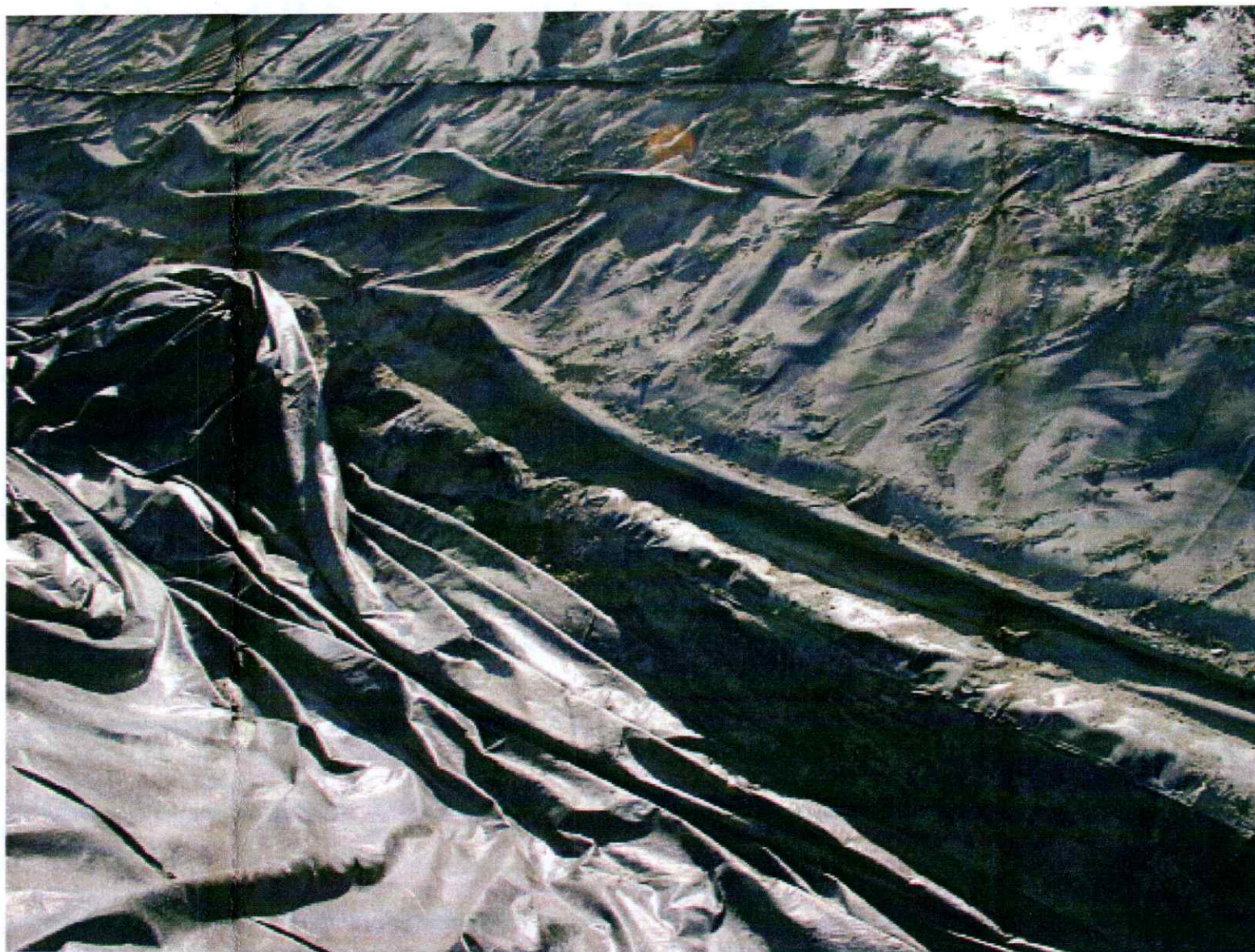






















9/29/09









