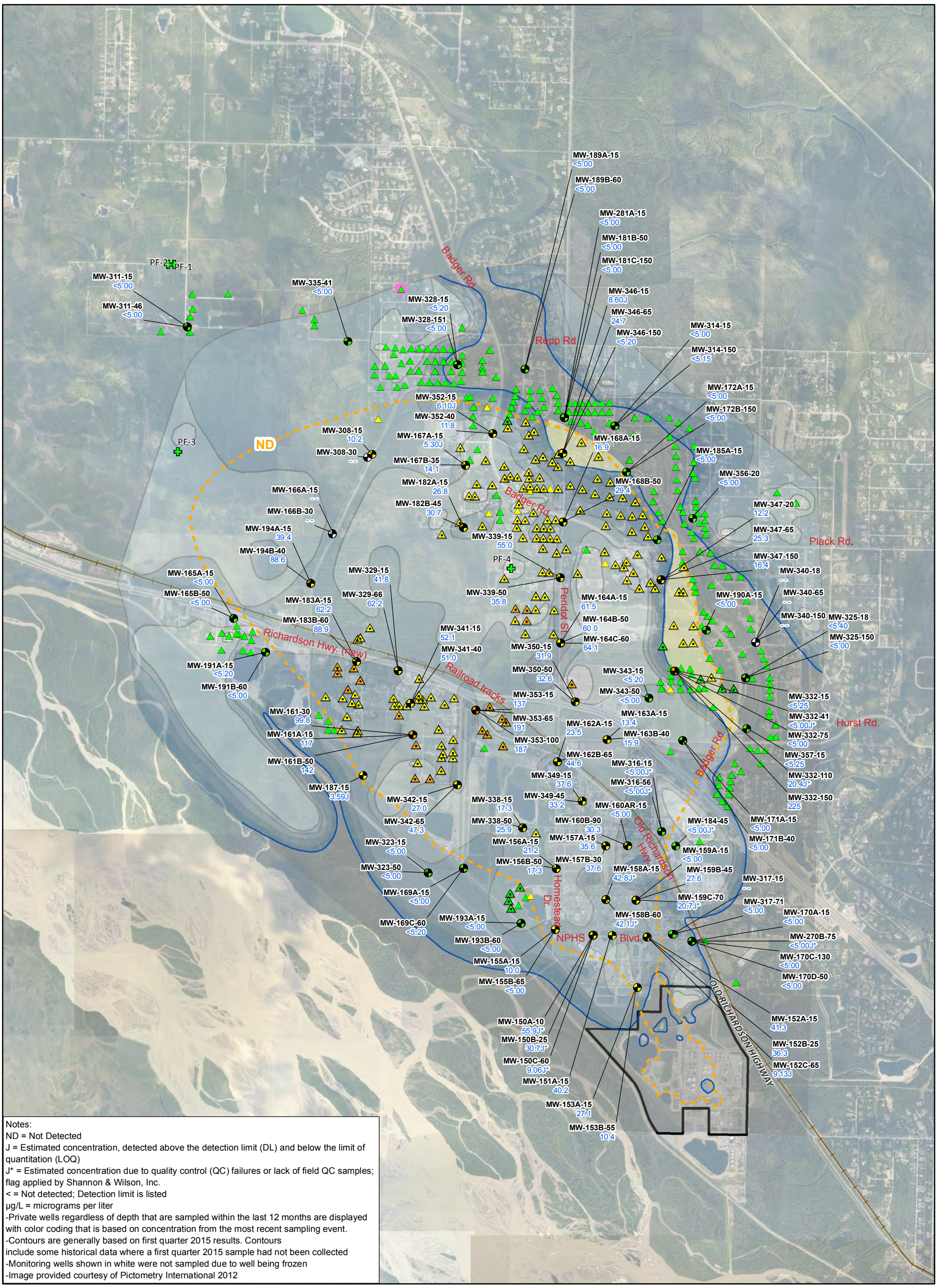
CITY: HIGHLANDS RANCH, CO DIV/GROUP: ENV/IM DB: BGRIFFITH LD: G FRANCE
PATH: W:\ARCGISDATA\GISPROJECTS_ENV\FHR_AK\NORTHPOLEREFINERY\GW_MONITORING\2015_Q1\MXD\OFFSITE\FIG 4-9 OFFSITEGWANALYTICALRESULTS_SUPRAPERMAFROSTSUBPERMAFROST.MXD DATE: 7/28/2015 TIME: 1:27:23 PM



Notes:
ND = Not Detected
J = Estimated concentration, detected above the detection limit (DL) and below the limit of quantitation (LOQ)
J* = Estimated concentration due to quality control (QC) failures or lack of field QC samples; flag applied by Shannon & Wilson, Inc.
< = Not detected; Detection limit is listed
µg/L = micrograms per liter
-Private wells regardless of depth that are sampled within the last 12 months are displayed with color coding that is based on concentration from the most recent sampling event.
-Contours are generally based on first quarter 2015 results. Contours include some historical data where a first quarter 2015 sample had not been collected
-Monitoring wells shown in white were not sampled due to well being frozen
-Image provided courtesy of Pictometry International 2012

Legend

- Monitoring Well
- Point-of-entry treatment system sample collected
- Private Well
- Initial Result from First Quarter 2015
- Permafrost Boring
- Suprapermafrost and Subpermafrost Mixing Zone
- FHRA Property Boundary
- Not sampled due to well being frozen or obstructed
- Approximate Sulfolane Isopleth Regardless of Depth in µg/L

Private Well Sulfolane Results

- Not Detected
- 2.9 - 100 µg/L
- 100 - 1,000 µg/L

Monitoring Well Sulfolane Results

- Not Detected
- 3.59 - 100 µg/L
- 100 - 1,000 µg/L

Depth to Permafrost in feet

- < 10
- 10 - 30
- 30 - 60
- 60 - 90
- 90 - 120
- 120 - 150
- > 150

0 2,500 5,000
SCALE IN FEET

FLINT HILLS RESOURCES ALASKA, LLC
NORTH POLE TERMINAL, NORTH POLE, ALASKA

FIRST SEMIANNUAL 2015 OFFSITE GROUNDWATER MONITORING REPORT

APPROXIMATE EXTENT OF SULFOLANE IMPACTS IN OFFSITE MONITORING WELLS AND PRIVATE WELLS - FIRST QUARTER 2015

ARCADIS

FIGURE
4-9