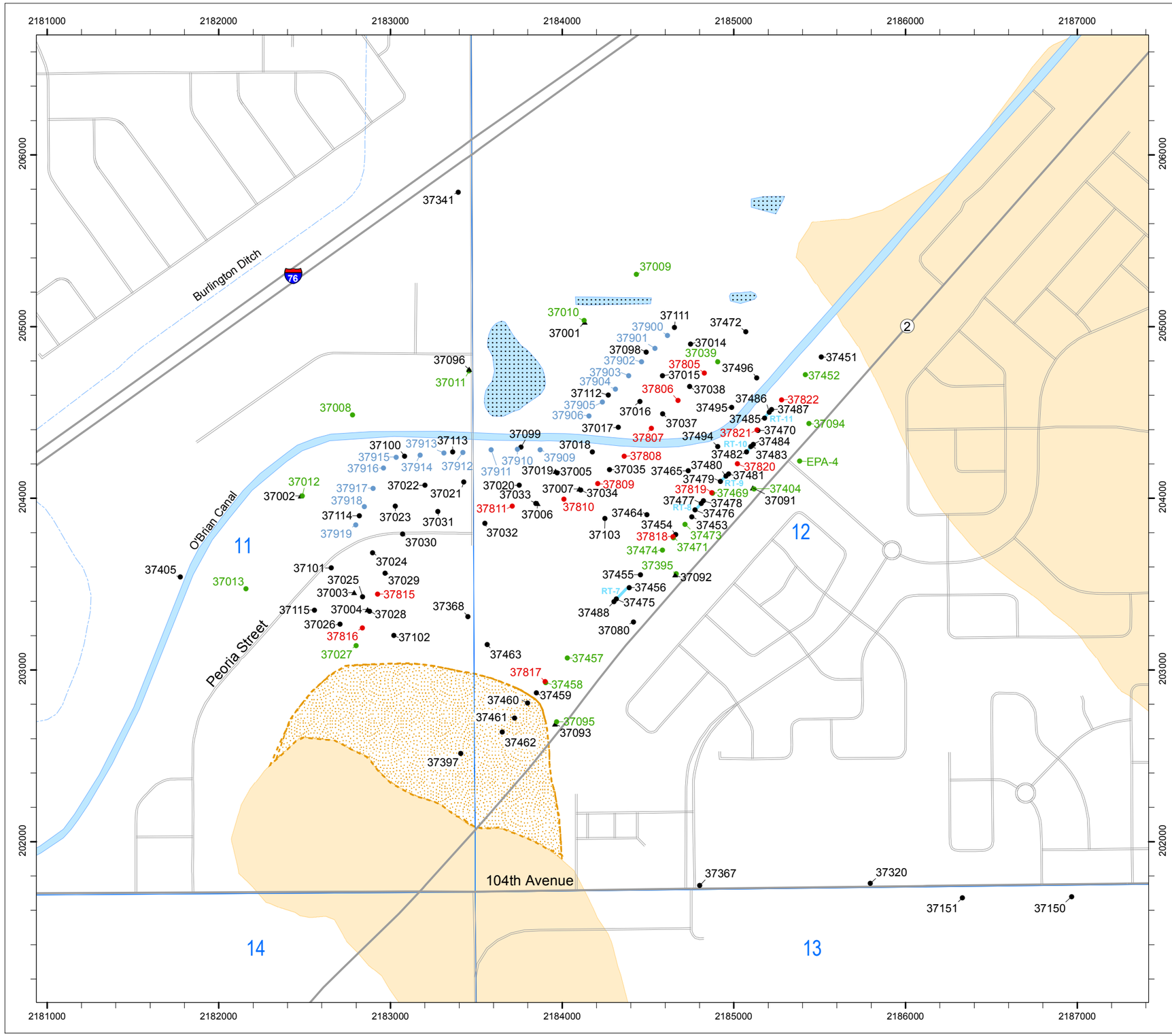
Appendix G: Northern Pathway System Figures



FY14 Northern Pathway Monitoring Well Network of the Unconfined Aquifer

Legend

- Performance Water Quality Wells
- Extraction Wells
- Recharge Wells
- Monitoring Wells
  - Confined Flow System
  - Unconfined Flow System
- Recharge Trenches
- Light Duty Roads
- Primary Roads
- Ditches
- Lakes, Ponds, Rivers
- Gravel Pits
- Section Lines
- Unsaturated Alluvium (Developed using summer 2014 data)
- Low Permeability Alluvial Sediments

N

0 300 600 Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

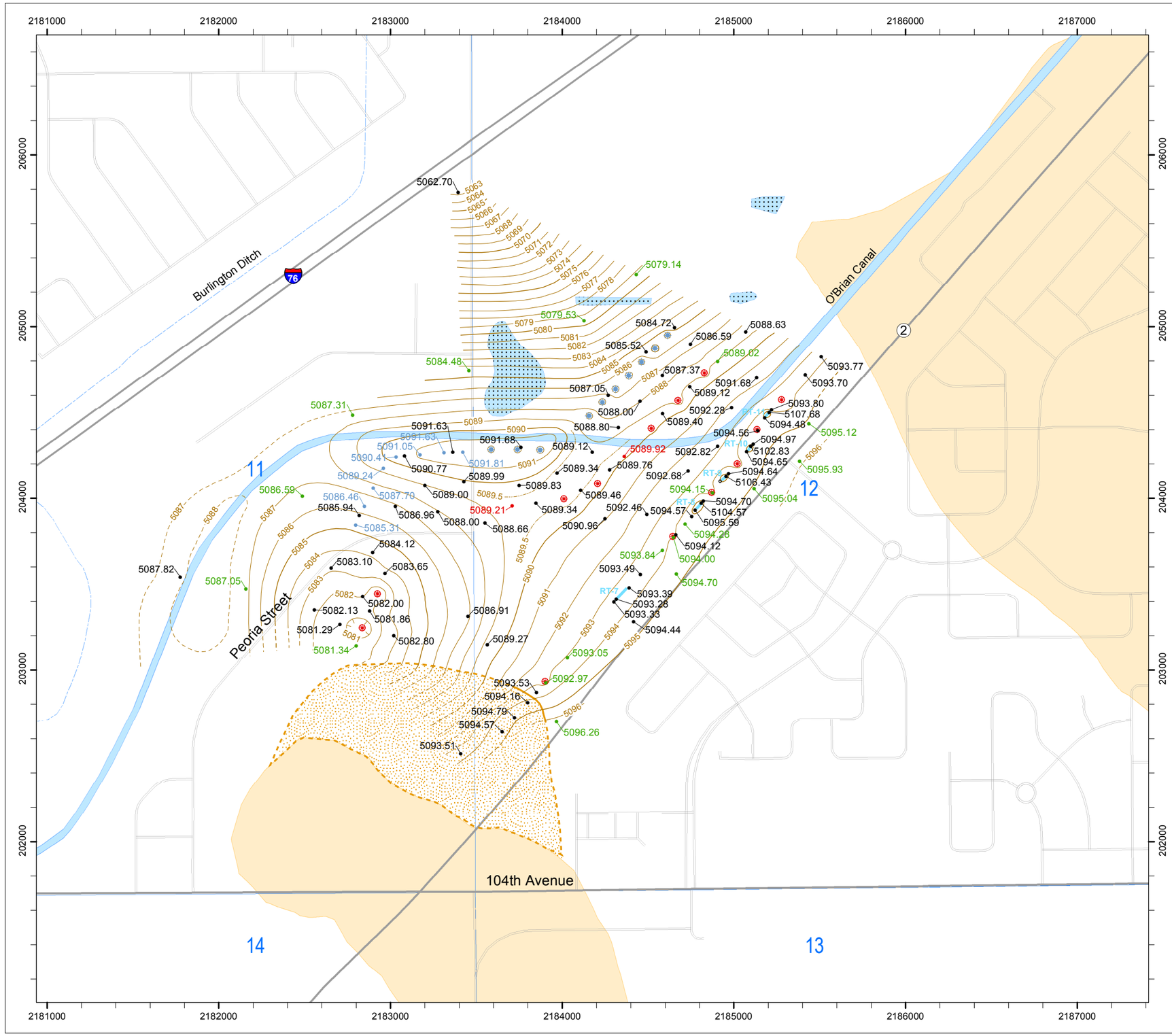
Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-1

Army/Shell GIS

8/26/2015 RMITS

M:\projects\oars\oar14\mxds\fy14np_well_location.mxd



FY14 1st Quarter Groundwater Elevation Contours of the Unconfined Aquifer Northern Pathway

Legend

- Lakes, Ponds, Rivers
- Gravel Pits
- Unsaturated Alluvium (Developed using summer 2014 data)
- Low Permeability Alluvial Sediments
- Section Lines
- Ditches
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected October 2013.
- Approximate water elevation contour
- Approximate supplemental water elevation contour
- Light Duty Roads
- Primary Roads
- Recharge Trenches

Measured Wells Used for Contouring with Water Elevations

- 5109.86 Extraction Wells
- 5109.86 Monitoring Wells
- 5109.86 Recharge Wells
- 5109.86 Performance Water Quality Wells

Wells Not Measured or Not Used for Contouring

- Depression in water table due to extraction well. May not match actual areal extent of depression.
- Mound in water table due to recharge well. May not match actual areal extent of mound.

Wells Not Measured or Not Used for Contouring

- Monitoring Wells

N

0 150 300 600
Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-2

Army/Shell GIS

8/26/2015 RMITS

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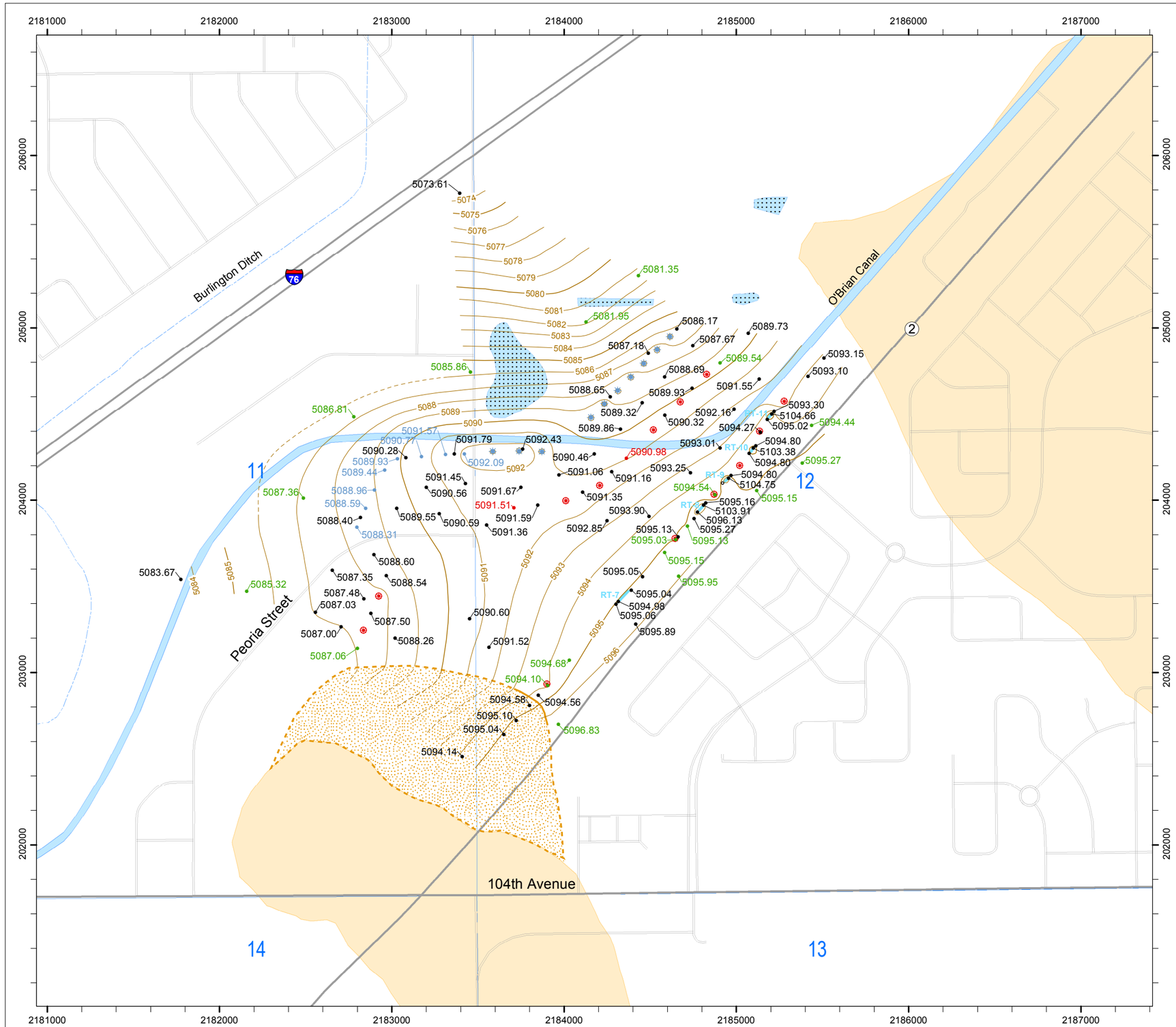

FY14 2nd Quarter Groundwater Elevation Contours of the Unconfined Aquifer Northern Pathway

Legend

- Lakes, Ponds, Rivers
- Gravel Pits
- Unsaturated Alluvium (Developed using summer 2014 data)
- Low Permeability Alluvial Sediments
- Section Lines
- Ditches
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected January 2014.
- Approximate water elevation contour
- Light Duty Roads
- Primary Roads
- Recharge Trenches

Measured Wells Used for Contouring with Water Elevations

- 5109.86 Extraction Wells
- 5109.86 Monitoring Wells
- 5109.86 Recharge Wells
- 5109.86 Performance Water Quality Wells

Wells Not Measured or Not Used for Contouring

- Depression in water table due to extraction well. May not match actual areal extent of depression.
- Mound in water table due to recharge well. May not match actual areal extent of mound.
- Monitoring Wells

N

0 150 300 600
Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-3

Army/Shell GIS

8/26/2015 RMITS

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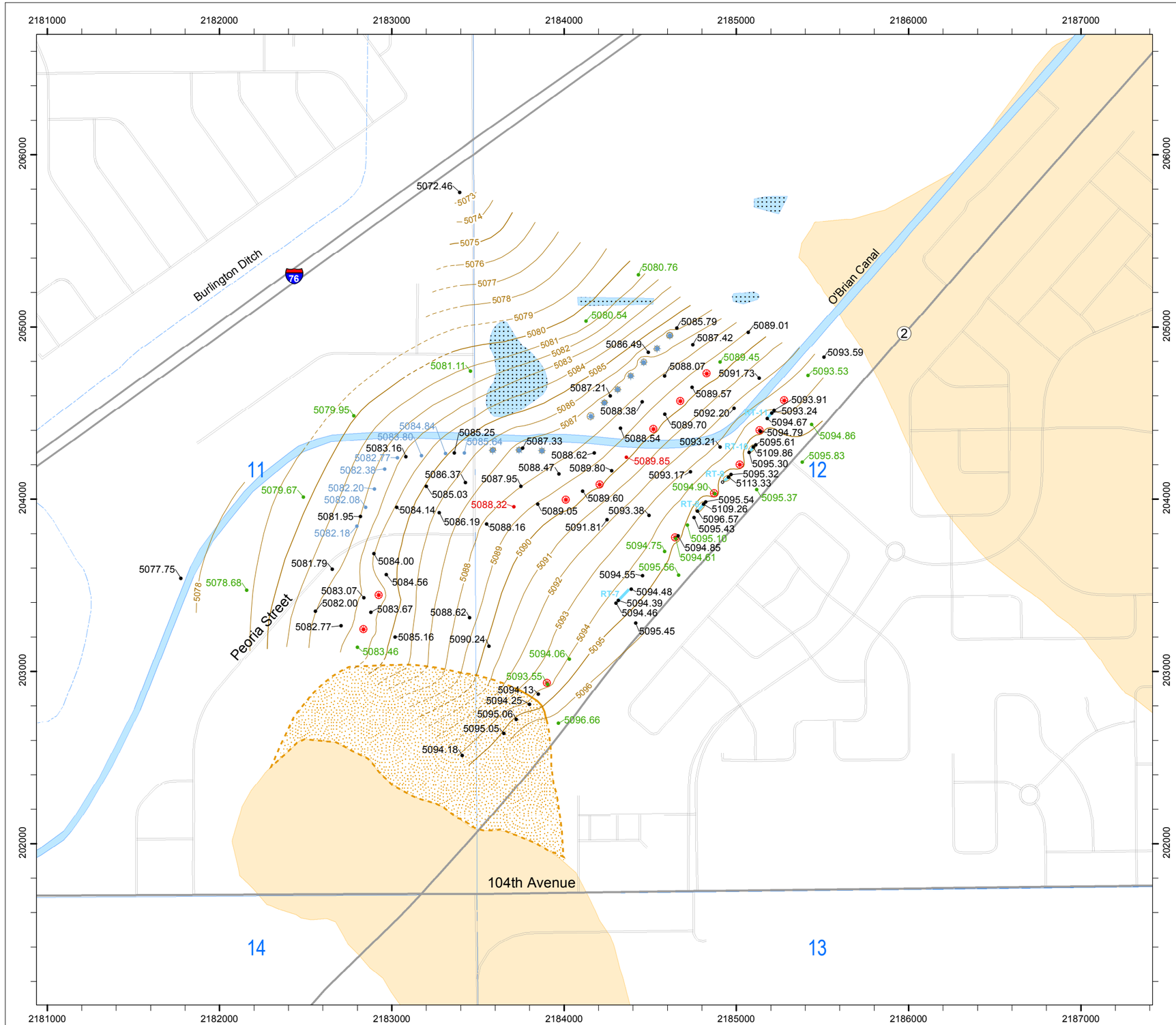

FY14 3rd Quarter Groundwater Elevation Contours of the Unconfined Aquifer Northern Pathway

Legend

- Lakes, Ponds, Rivers
- Gravel Pits
- Unsaturated Alluvium (Developed using summer 2014 data)
- Low Permeability Alluvial Sediments
- Section Lines
- Ditches
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected April 2014.
- Approximate water elevation contour
- Light Duty Roads
- Primary Roads
- Recharge Trenches

Measured Wells Used for Contouring with Water Elevations

- 5109.86 Extraction Wells
- 5109.86 Monitoring Wells
- 5109.86 Recharge Wells
- 5109.86 Performance Water Quality Wells

Wells Not Measured or Not Used for Contouring

- Depression in water table due to extraction well. May not match actual areal extent of depression.
- Mound in water table due to recharge well. May not match actual areal extent of mound.
- Monitoring Wells

N

0 150 300 600
Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-4

Army/Shell GIS

8/26/2015 RMITS

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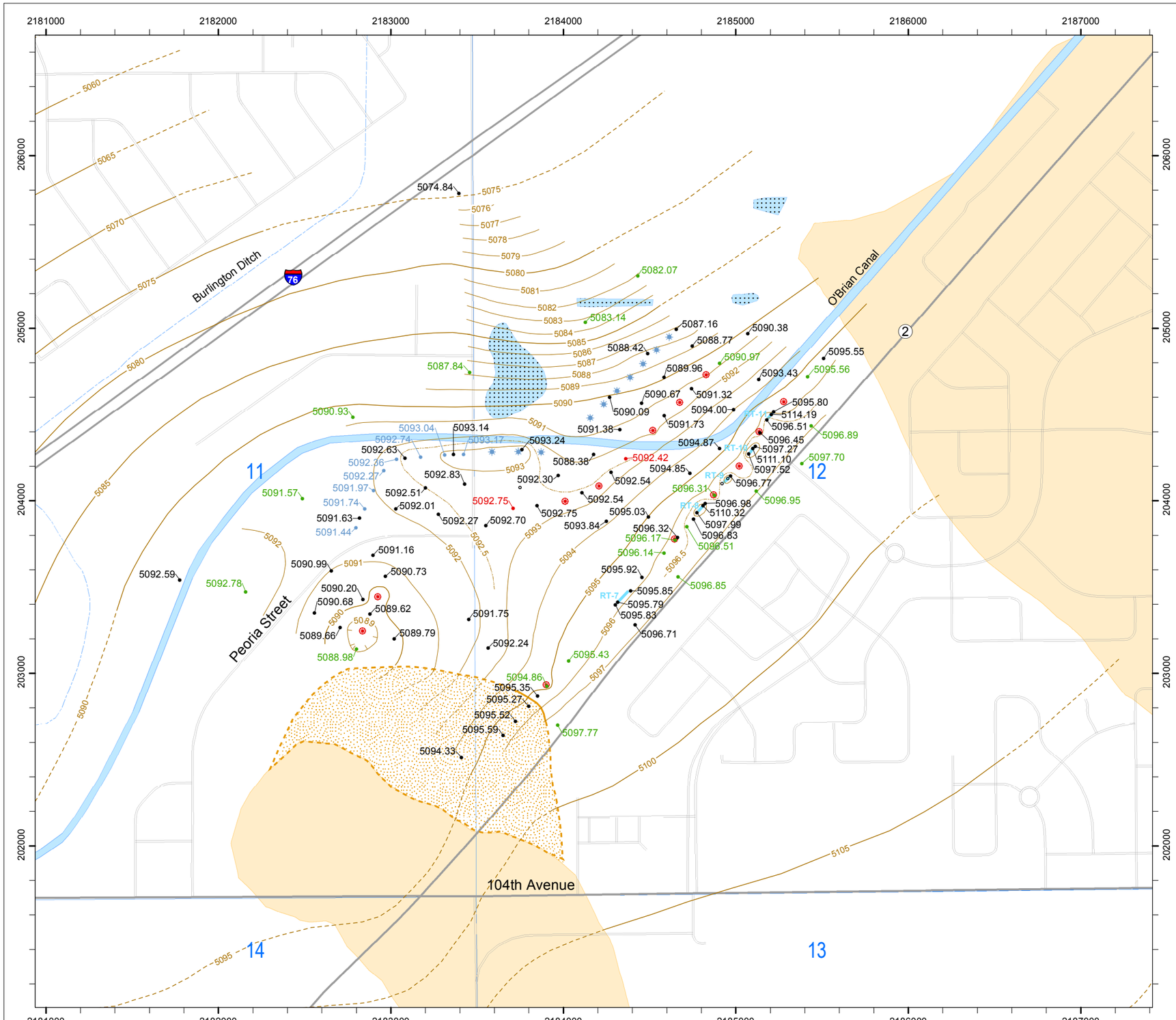

FY14 4th Quarter Groundwater Elevation Contours of the Unconfined Aquifer Northern Pathway

Legend

- Lakes, Ponds, Rivers
- Gravel Pits
- Unsaturated Alluvium (Developed using summer 2014 data)
- Low Permeability Alluvial Sediments
- Section Lines
- Ditches
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected July 2014.
- Approximate water elevation contour
- Approximate supplemental water elevation contour
- Light Duty Roads
- Primary Roads
- Recharge Trenches

Measured Wells Used for Contouring with Water Elevations

- 5109.86 Extraction Wells
- 5109.86 Monitoring Wells
- 5109.86 Recharge Wells
- 5109.86 Performance Water Quality Wells

Wells Not Measured or Not Used for Contouring

- Depression in water table due to extraction well. May not match actual areal extent of depression.
- Mound in water table due to recharge well. May not match actual areal extent of mound.
- Monitoring Wells

N

0 150 300 600
Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-5

Army/Shell GIS

8/26/2015 RMITS

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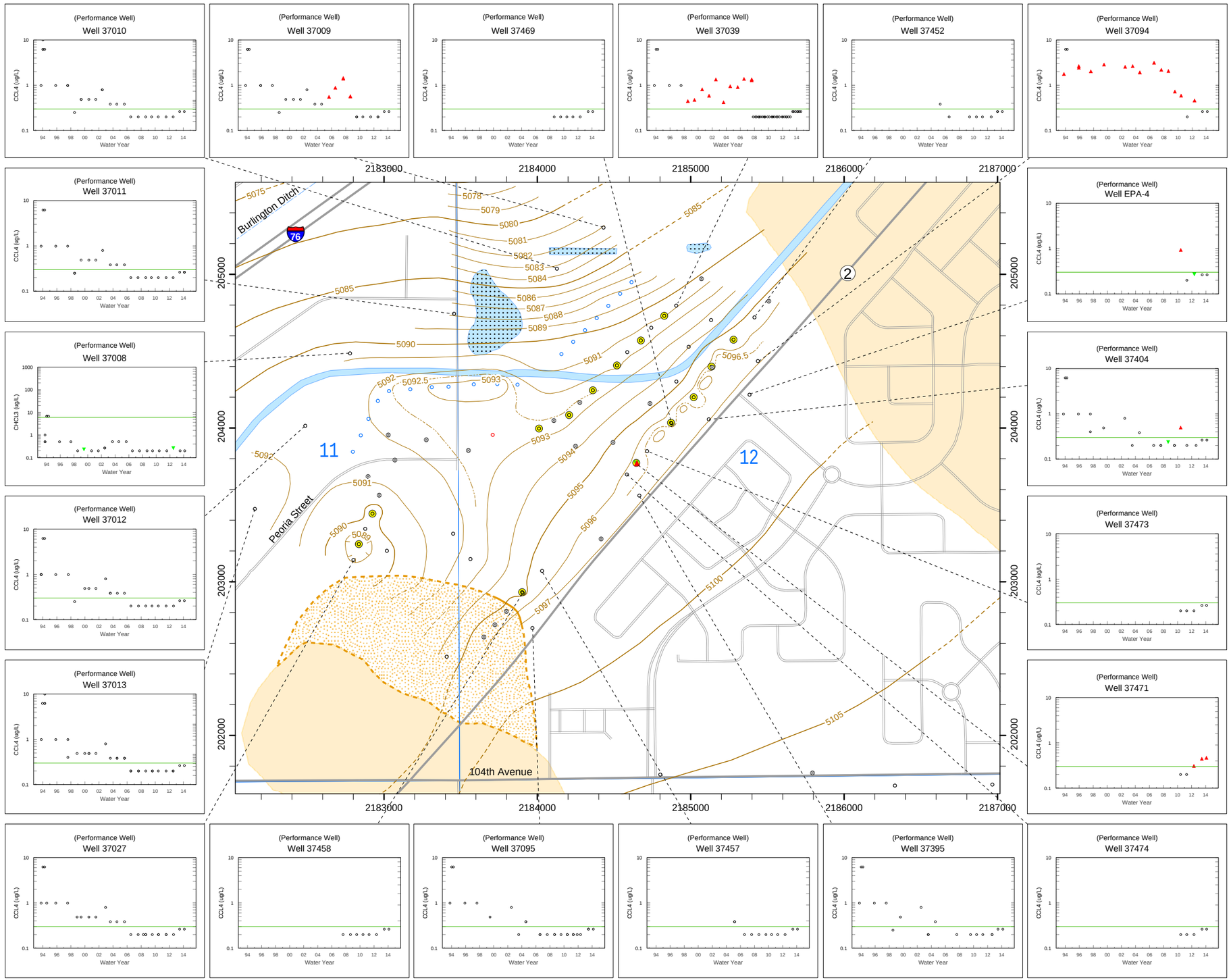
FY14 Carbon Tetrachloride Concentration for Selected Wells in the Unconfined Aquifer at the Northern Pathway



Legend

- Light Duty Roads
- Primary Roads
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected July 2014.
- Approximate water elevation contour
- Lakes, Ponds, Rivers
- Gravel Pits
- Ditches
- Section Lines
- Low Permeability Alluvial Sediments
- Unsaturated Alluvium (Developed using summer 2014 data)

Treatment System Wells Not Used For Water Quality

- Recharge Wells
- Extraction Wells

Water Quality Wells

- Chemical Detected At or Above Containment System Remediation Goal (CSRG)*
- Chemical Detected Below CSRG*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled In FY14

Extraction Wells Used For Water Quality

- Chemical Detected At or Above Containment System Remediation Goal (CSRG)*
- Chemical Detected Below CSRG*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled in FY14

* Mapped symbols reflect FY14 chemical values only.

Graphed CSRG indicator line for Carbon Tetrachloride, 0.30 micrograms per liter

N

0 250 500 Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-6

Army/Shell GIS

8/26/2015 RMITS

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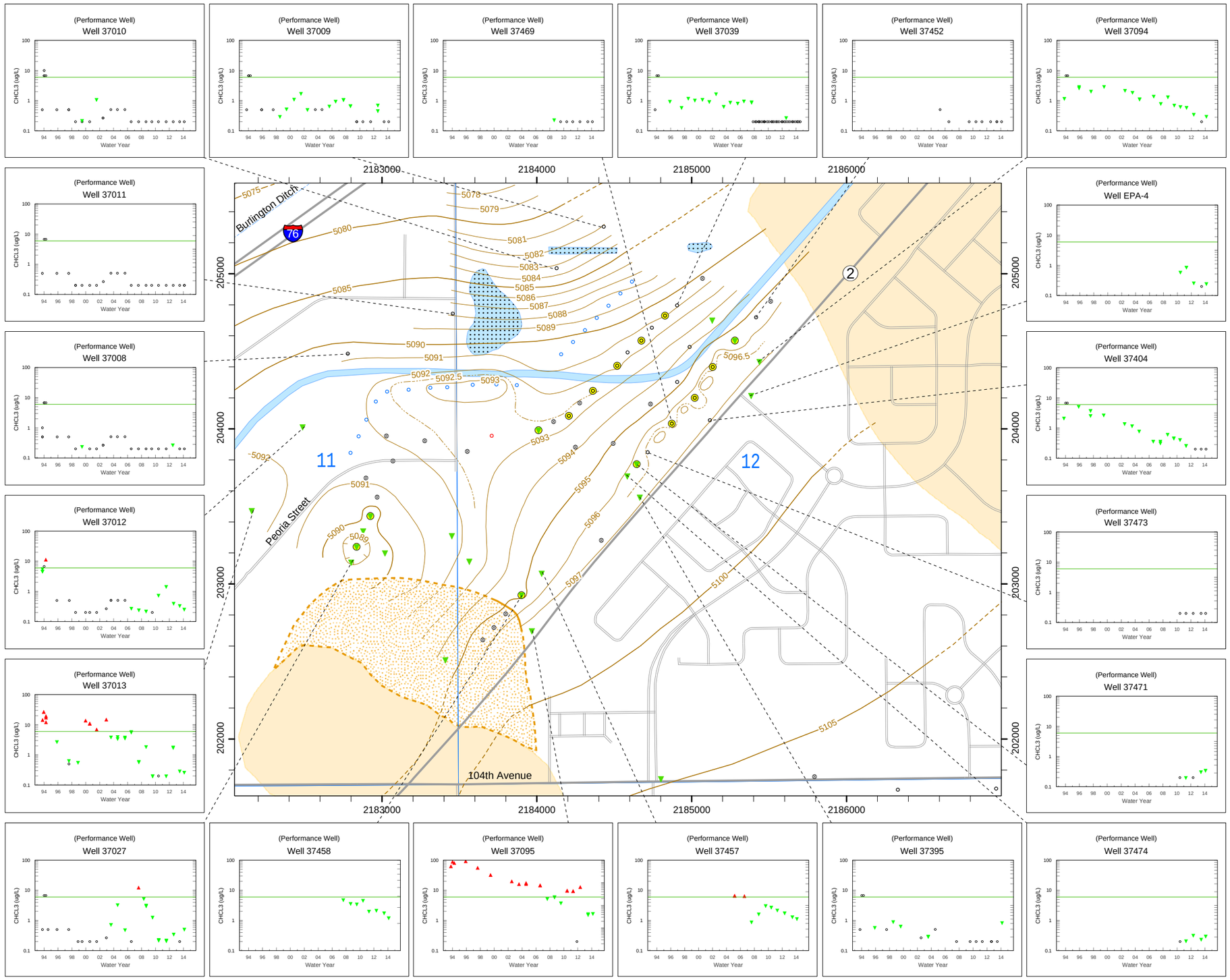
FY14 Chloroform Concentration for Selected Wells in the Unconfined Aquifer at the Northern Pathway



Legend

- Light Duty Roads
- Primary Roads
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected July 2014.
- Approximate water elevation contour
- Lakes, Ponds, Rivers
- Gravel Pits
- Ditches
- Section Lines
- Low Permeability Alluvial Sediments
- Unsaturated Alluvium (Developed using summer 2014 data)

Treatment System Wells Not Used For Water Quality

- Recharge Wells
- Extraction Wells

Extraction Wells Used For Water Quality

- Chemical Detected At or Above Containment System Remediation Goal (CSRG)*
- Chemical Detected Below CSRG*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled in FY14

Water Quality Wells

- Chemical Detected At or Above Containment System Remediation Goal (CSRG)*
- Chemical Detected Below CSRG*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled In FY14

* Mapped symbols reflect FY14 chemical values only.

- Graphed CSRG indicator line for Chloroform, 6.0 micrograms per liter

N

0 330 660
Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-7

Army/Shell GIS

8/26/2015 RMITS

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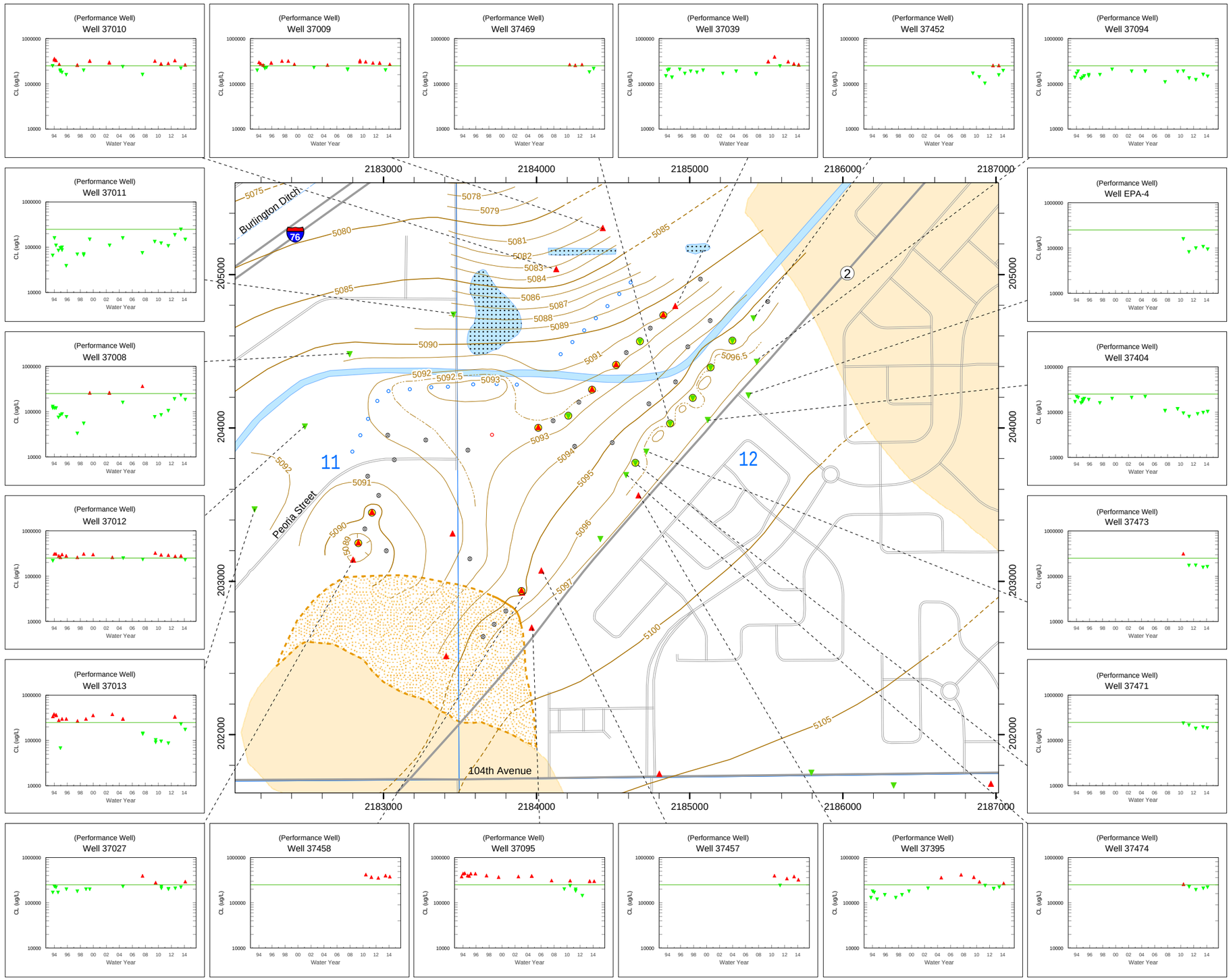

FY14 Chloride Concentration for Selected Wells in the Unconfined Aquifer at the Northern Pathway

Legend

- Light Duty Roads
- Primary Roads
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected July 2014.
- Approximate water elevation contour
- Lakes, Ponds, Rivers
- Gravel Pits
- Ditches
- Section Lines
- Low Permeability Alluvium Sediments
- Unsaturated Alluvium (Developed using summer 2014 data)

Treatment System Wells Not Used For Water Quality

- Recharge Wells
- Extraction Wells

Extraction Wells Used For Water Quality

- Chemical Detected At or Above Containment System Remediation Goal (CSRG)*
- Chemical Detected Below CSRG*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled in FY14

Water Quality Wells

- Chemical Detected At or Above Containment System Remediation Goal (CSRG)*
- Chemical Detected Below CSRG*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled In FY13

* Mapped symbols reflect FY14 chemical values only.

- Graphed CSRG indicator line for Chloride, 250 milligrams per liter

N

0 250 500 Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-8

Army/Shell GIS

8/26/2015 RMITS

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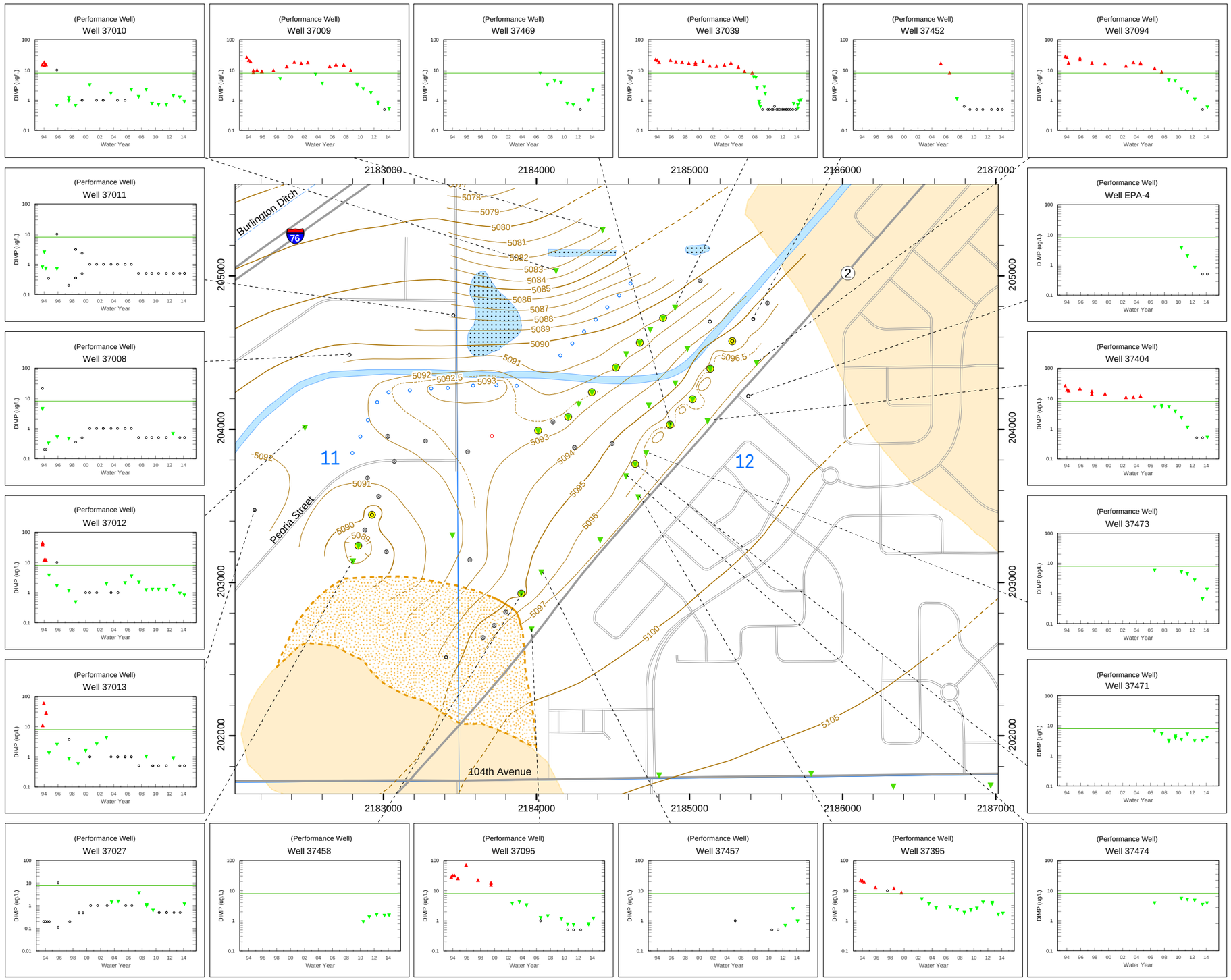

FY14 Diisopropylmethylphosphonate Concentration for Selected Wells in the Unconfined Aquifer at the Northern Pathway

Legend

- Light Duty Roads
- Primary Roads
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected July 2014.
- Approximate water elevation contour
- Lakes, Ponds, Rivers
- Gravel Pits
- Ditches
- Section Lines
- Low Permeability Alluvial Sediments
- Unsaturated Alluvium (Developed using summer 2014 data)

Treatment System Wells Not Used For Water Quality

- Recharge Wells
- Extraction Wells

Extraction Wells Used For Water Quality

- Chemical Detected At or Above Containment System Remediation Goal (CSRG)*
- Chemical Detected Below CSRG*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled in FY14

Water Quality Wells

- Chemical Detected At or Above Containment System Remediation Goal (CSRG)*
- Chemical Detected Below CSRG*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled In FY14

* Mapped symbols reflect FY14 chemical values only.

Graphed CSRG indicator line for Diisopropylmethylphosphonate, 8 micrograms per liter

N

0 250 500 Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-9

Army/Shell GIS

8/26/2015 RMITS

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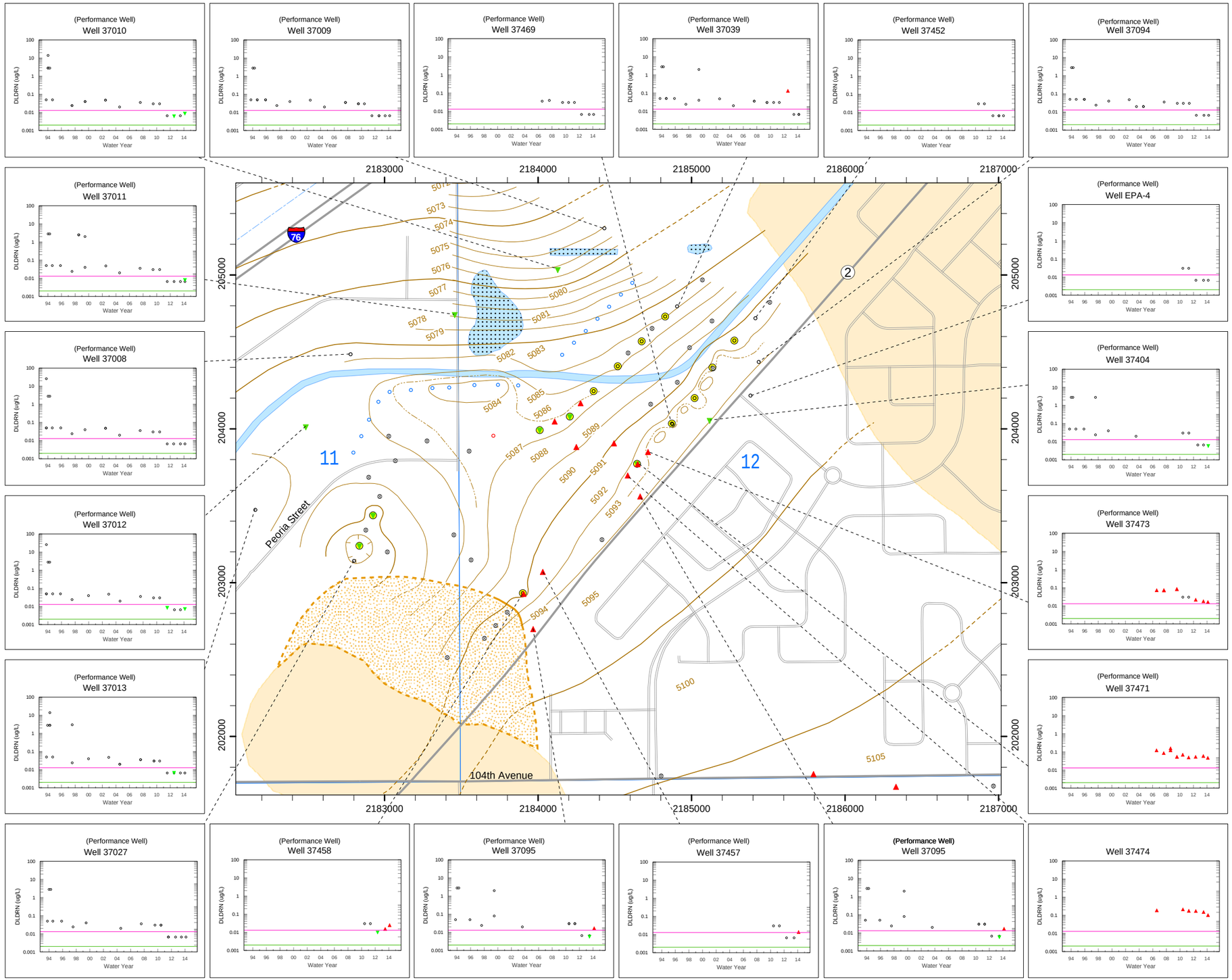
FY14 Dieldrin Concentration for Selected Wells in the Unconfined Aquifer at the Northern Pathway



Legend

- Light Duty Roads
- Primary Roads
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected July 2014.
- Approximate water elevation contour
- Lakes, Ponds, Rivers
- Gravel Pits
- Ditches
- Section Lines
- Unsaturated Alluvium (Developed using summer 2014 data)

Treatment System Wells Not Used For Water Quality

- Recharge Wells
- Extraction Wells

Water Quality Wells

- Chemical Detected At or Above Practical Quantitation Limit (PQL)*
- Chemical Detected Below Practical Quantitation Limit (PQL)*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled In FY14

Extraction Wells Used For Water Quality

- Chemical Detected At or Above Practical Quantitation Limit (PQL)*
- Chemical Detected Below Practical Quantitation Limit (PQL)*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled in FY14

* Mapped symbols reflect FY14 chemical values only.

- Graphed CSRG indicator line for Dieldrin, 0.002 micrograms per liter
- Graphed PQL indicator line for Dieldrin, 0.013 micrograms per liter

N

0 250 500 Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-10

Army/Shell GIS

8/26/2015 RMITS

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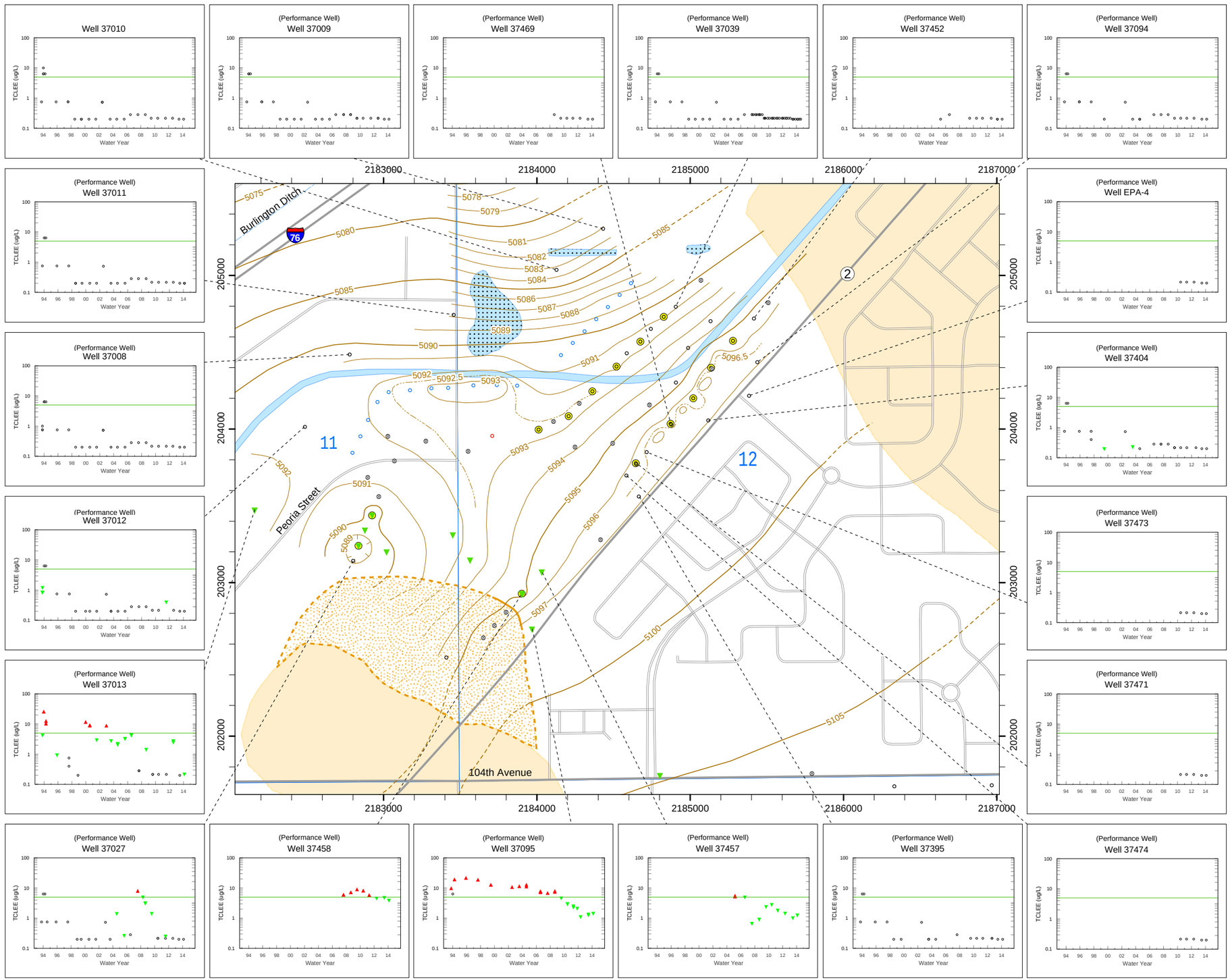

FY14 Tetrachloroethylene Concentration for Selected Wells in the Unconfined Aquifer at the Northern Pathway

Legend

- Light Duty Roads
- Primary Roads
- Water elevation contour - 1 foot interval. Hachures indicate depression. Water elevations collected July 2014.
- Approximate water elevation contour
- Lakes, Ponds, Rivers
- Gravel Pits
- Ditches
- Section Lines
- Low Permeability Alluvial Sediments
- Unsaturated Alluvium (Developed using summer 2014 data)

Treatment System Wells Not Used For Water Quality

- Recharge Wells
- Extraction Wells

Extraction Wells Used For Water Quality

- Chemical Detected At or Above Practical Quantitation Limit (PQL)*
- Chemical Detected Below Practical Quantitation Limit (PQL)*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled in FY14

Water Quality Wells

- Chemical Detected At or Above Practical Quantitation Limit (PQL)*
- Chemical Detected Below Practical Quantitation Limit (PQL)*
- Chemical Less Than Method Reporting Limit (MRL)*
- Chemical Not Sampled In FY14

* Mapped symbols reflect FY14 chemical values only.

- Graphed CSRG indicator line for Tetrachloroethylene, 5 micrograms per liter

N

0 250 500 Feet

NAD27-NGVD29 Datum, US Survey Feet, Colorado North Zone

Sources: U.S. Army, RMA GIS, PMC, OMC, Shell/URS Corp.

Figure G-11

Army/Shell GIS

8/26/2015 RMITS

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