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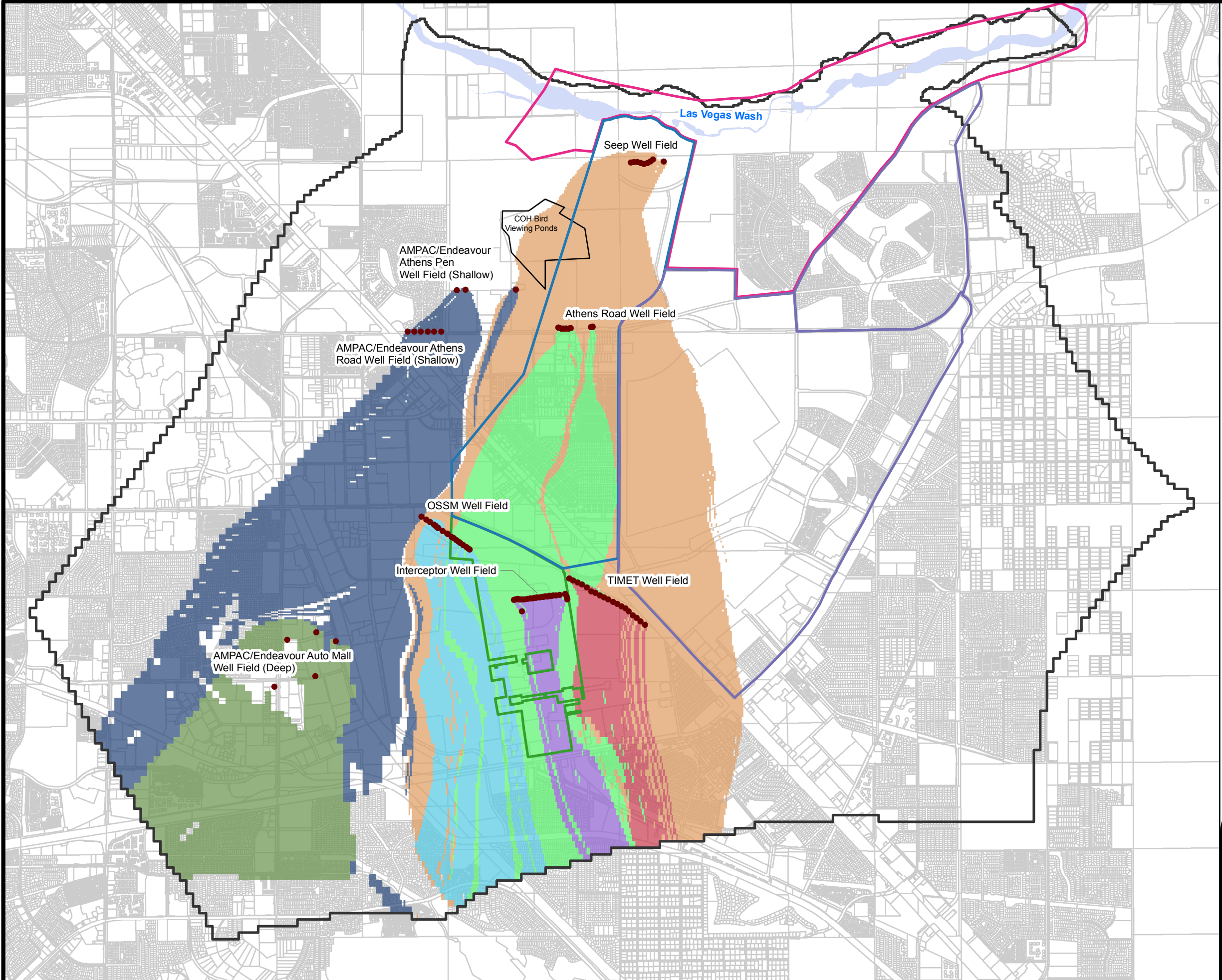
- The process flows shown are average flow rates from July 2016 through June 2017.
- gpm = gallons per minute ml/min = milliliters per minute OOS = Out of Service IX=Ion Exchange
- 1) Extraction wells began operating in November 2016 as part of the AP Area Soil Flushing Treatability Study.
- 2) An ion exchange (IX) treatment system began treating a portion of groundwater extracted by the SWF in February 2017.
- 3) Groundwater Treatment Plant (GWTP) for hexavalent chromium removal. Ferrous sulfate (FeSO₄) added to chemically reduce hexavalent chromium. Clarifier settles solids. Sludge is removed and landfilled.
- 4) Carbon treatment to remove organic compounds consists of three 20,000-pound granular activated carbon (GAC) vessels.
- 5) Fluidized Bed Reactor (FBR) Biological Treatment Plant for removal of perchlorate consists of five 33,000 gallon first-stage FBRs, four 28,800 gallon second-stage FBRs, aeration (air and hydrogen peroxide, H₂O₂), dissolved air flotation (DAF), two plate and frame filter presses, and a sand filter.
- 6) GW-11 operated as an equalization basin from 8/15 through 9/12, 10/12 through 10/20, 11/2 through 11/26, 12/19 through 12/24, and 2/9 through 2/13. Otherwise GW-11 was generally bypassed during the reporting period.



Groundwater Extraction and Treatment System (GWETS) Flow Diagram
 Nevada Environmental Response Trust (NERT)
 Henderson, Nevada

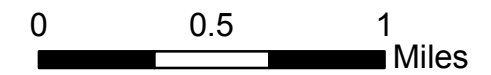
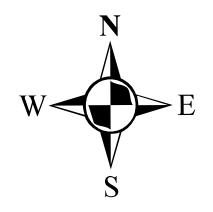
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- Legend**
- Extraction Wells
 - ▭ Downgradient Study Area
 - ▭ Eastside Study Area
 - ▭ NERT Off-Site Study Area
 - ▭ NERT Site
 - ▭ Phase 5 Model Boundary
 - ▭ Las Vegas Wash
- Capture Zone**
- ▭ Interceptor Well Field
 - ▭ Athens Road Well Field
 - ▭ Seep Well Field
 - ▭ OSSM Well Field
 - ▭ TIMET Well Field
 - ▭ AMPAC/Endeavour - Shallow Extraction
 - ▭ AMPAC/Endeavour - Deep Extraction

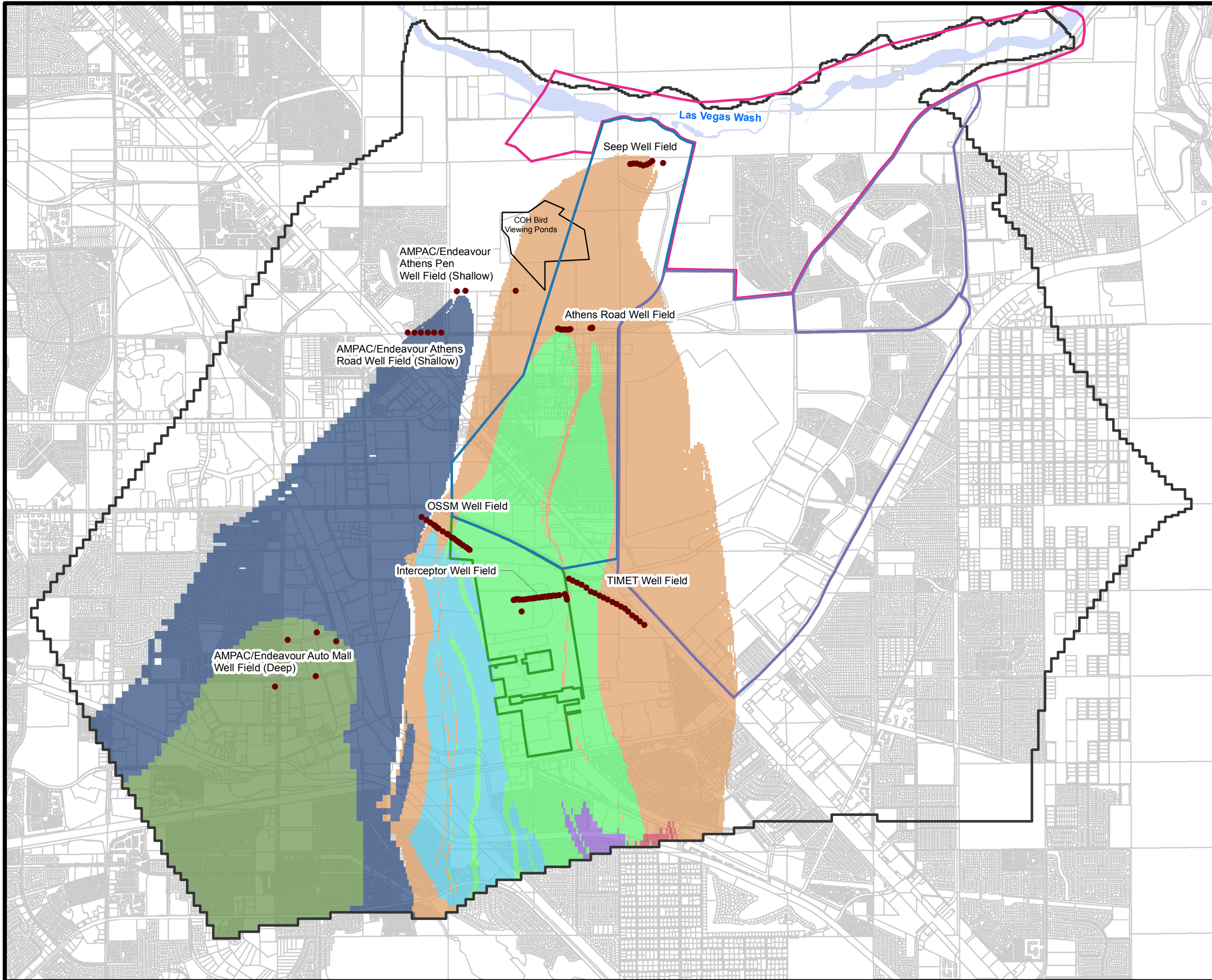
AMPAC/Endeavour = American Pacific Corporation/Endeavour LLC
 OSSM = Olin/Stauffer/Syngenta/Montrose
 TIMET = Titanium Metals Corporation
 COH = City of Henderson



SHALLOW CAPTURE ZONES
 Nevada Environmental Response Trust Site
 Henderson, Nevada

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| Date: 12/5/2017 | Contract Number: 21-41400A | Figure |
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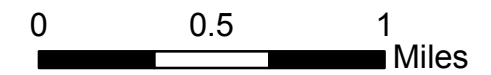
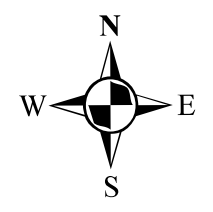
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Legend

- Extraction Wells
 - ▭ Downgradient Study Area
 - ▭ Eastside Study Area
 - ▭ NERT Off-Site Study Area
 - ▭ NERT Site
 - ▭ Phase 5 Model Boundary
 - ▭ Las Vegas Wash
- Capture Zone**
- ▭ Interceptor Well Field
 - ▭ Athens Road Well Field
 - ▭ Seep Well Field
 - ▭ OSSM Well Field
 - ▭ TIMET Well Field
 - ▭ AMPAC/Endeavour - Shallow Extraction
 - ▭ AMPAC/Endeavour - Deep Extraction

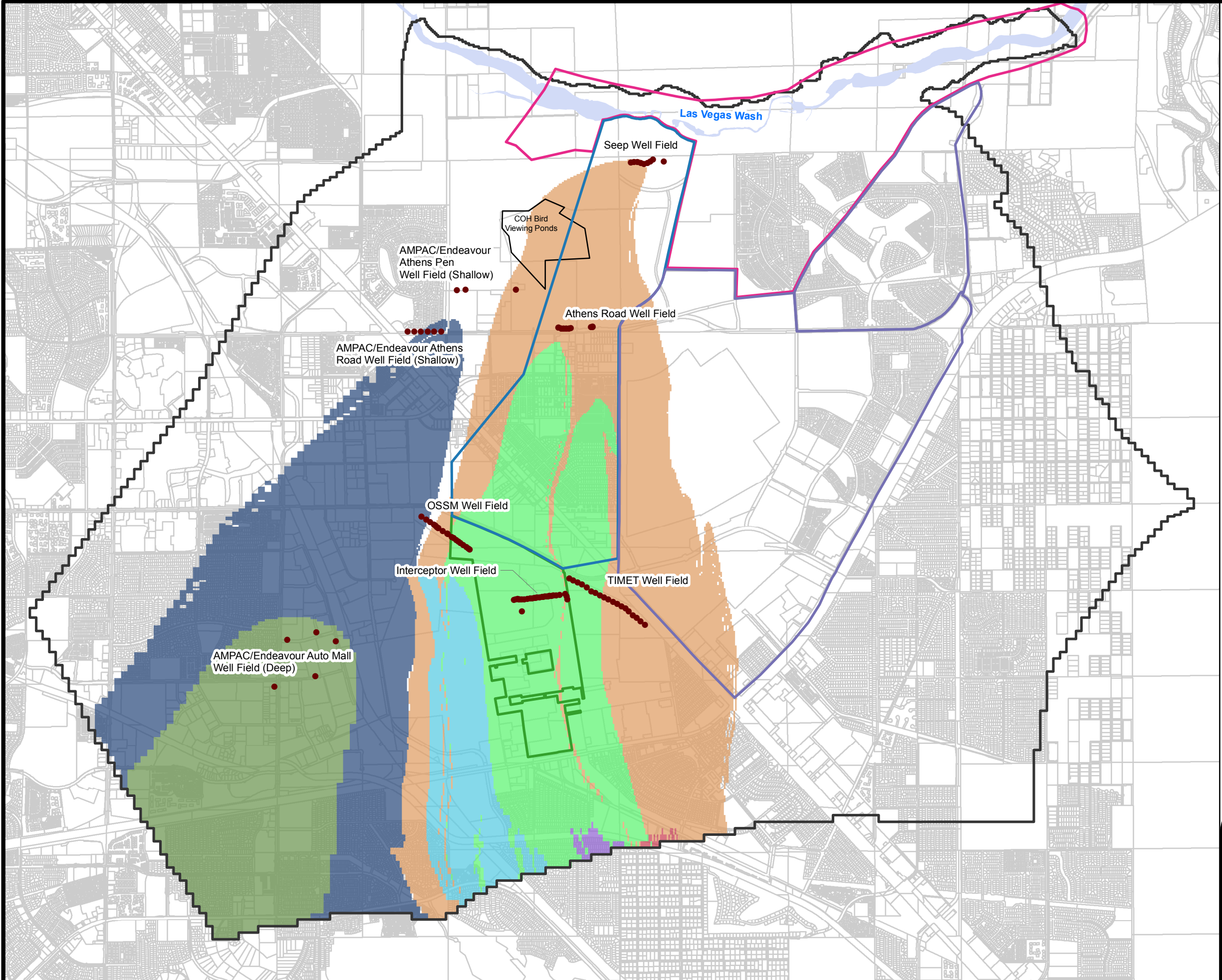
AMPAC/Endeavour = American Pacific Corporation/Endeavour LLC
 OSSM = Olin/Stauffer/Syngenta/Montrose
 TIMET = Titanium Metals Corporation
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MIDDLE CAPTURE ZONES
 Nevada Environmental Response Trust Site
 Henderson, Nevada

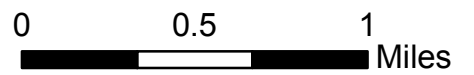
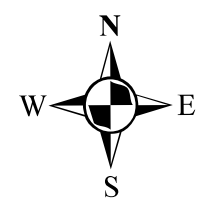
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| Date: 12/5/2017 | Contract Number: 21-41400A | Figure |
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- Legend**
- Extraction Wells
 - ▭ Downgradient Study Area
 - ▭ Eastside Study Area
 - ▭ NERT Off-Site Study Area
 - ▭ NERT Site
 - ▭ Phase 5 Model Boundary
 - ▭ Las Vegas Wash
- Capture Zone**
- ▭ Interceptor Well Field
 - ▭ Athens Road Well Field
 - ▭ Seep Well Field
 - ▭ OSSM Well Field
 - ▭ TIMET Well Field
 - ▭ AMPAC/Endeavour - Shallow Extraction
 - ▭ AMPAC/Endeavour - Deep Extraction

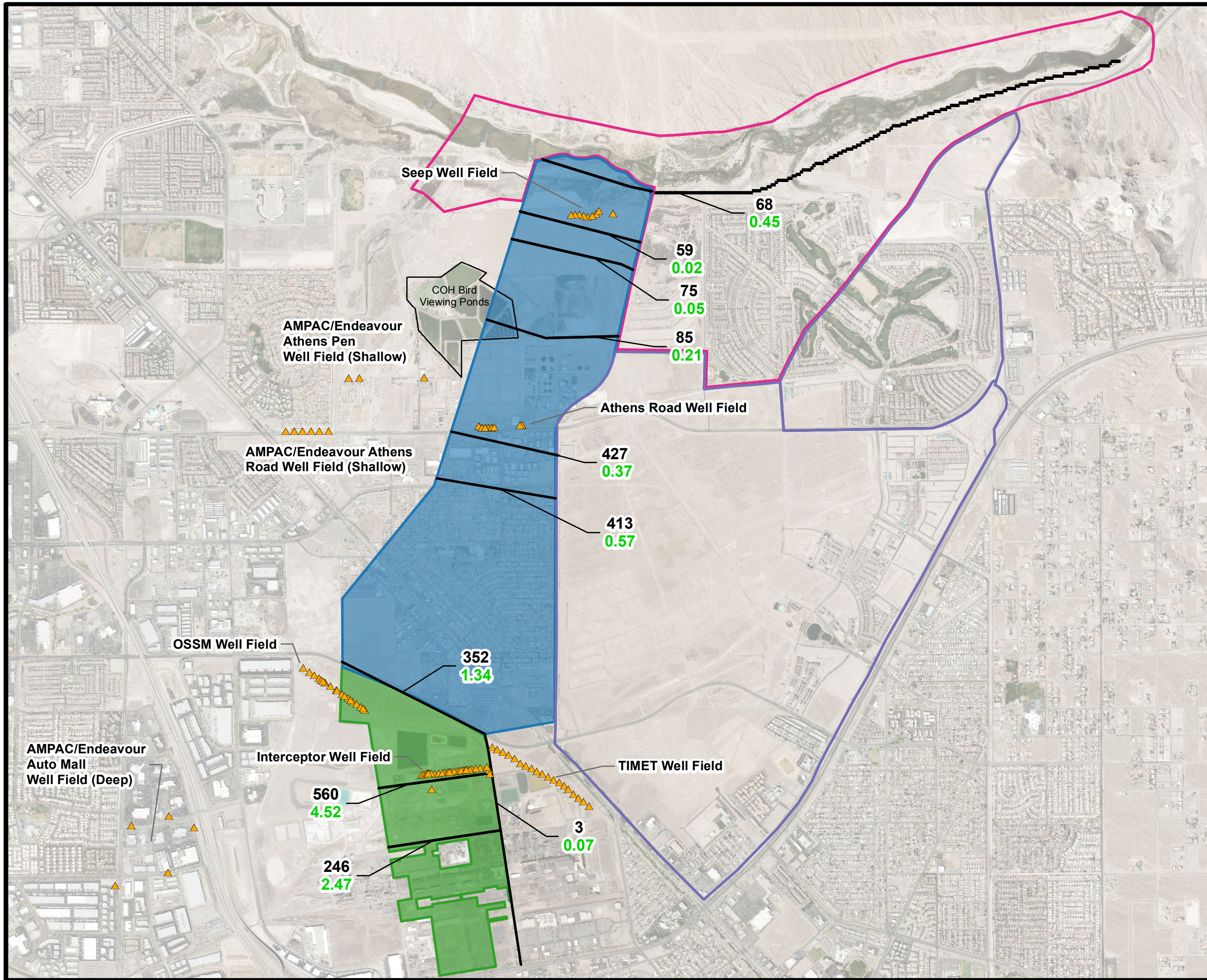
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 TIMET = Titanium Metals Corporation
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DEEP CAPTURE ZONES
 Nevada Environmental Response Trust Site
 Henderson, Nevada

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Legend

- Extraction Wells
- Transect Lines
- Downgradient Study Area
- Eastside Study Area
- NERT Site
- NERT Off-Site Study Area

246 Perchlorate Mass Flux (lbs/d)
2.47 Chromium Mass Flux (lbs/d)

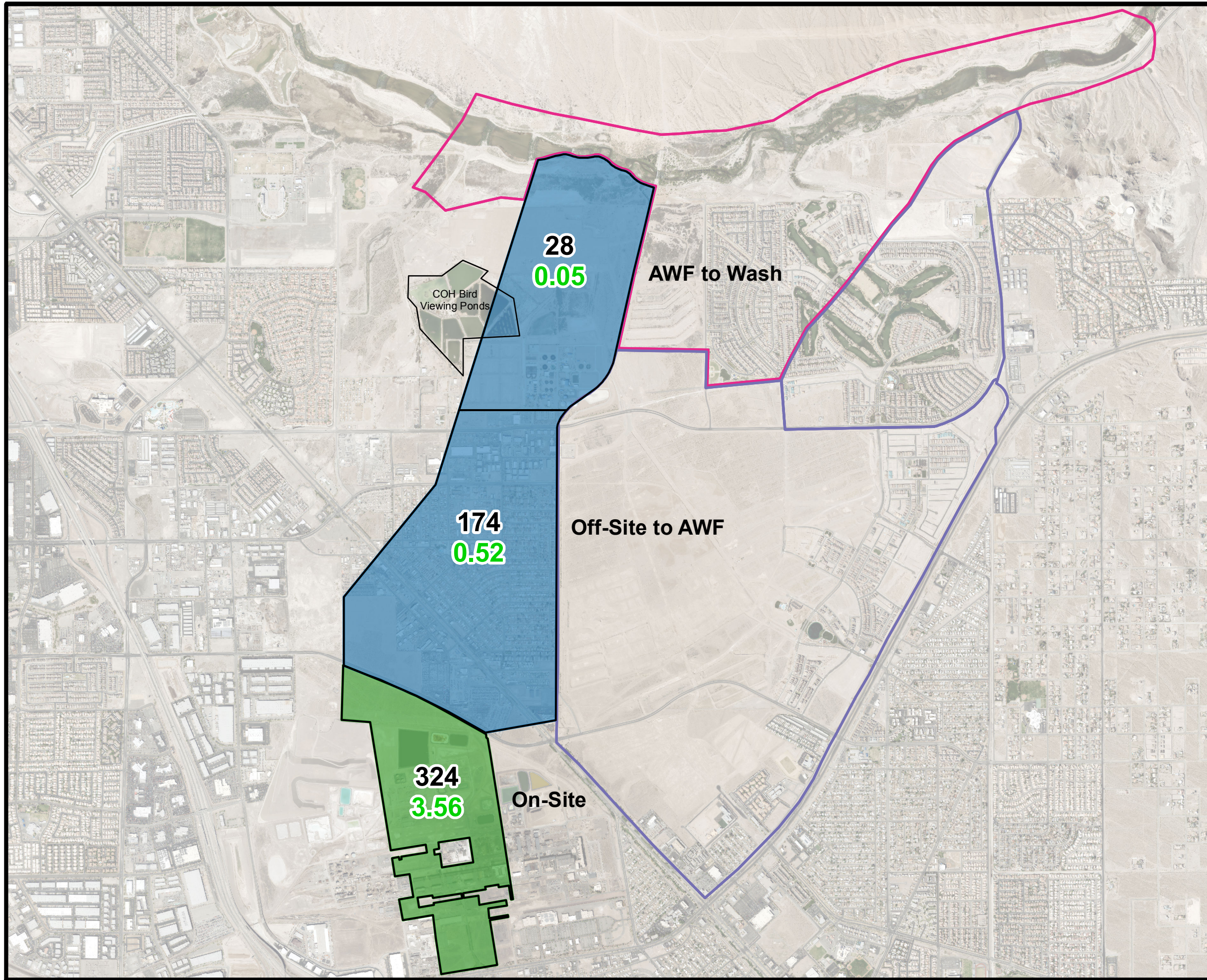
AMPAC/Endeavour = American Pacific Corporation/Endeavour LLC
 OSSM = Olin/Stauffer/Syngenta/Montrose
 TIMET = Titanium Metals Corporation
 COH = City of Henderson
 lbs/d= pounds per day





0 0.5 1 Miles



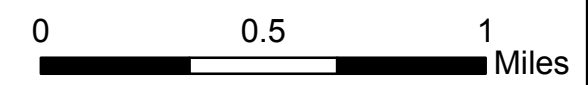
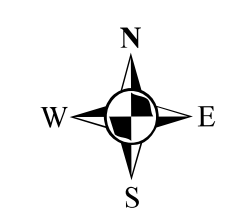
Horizontal Mass Flux Estimates
 Nevada Environmental Response Trust Site
 Henderson, Nevada

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| Date: 12/5/2017 | Contract Number: 21-41400A | Figure 4 |
| Drafter: AS | Approved: | Revised: |



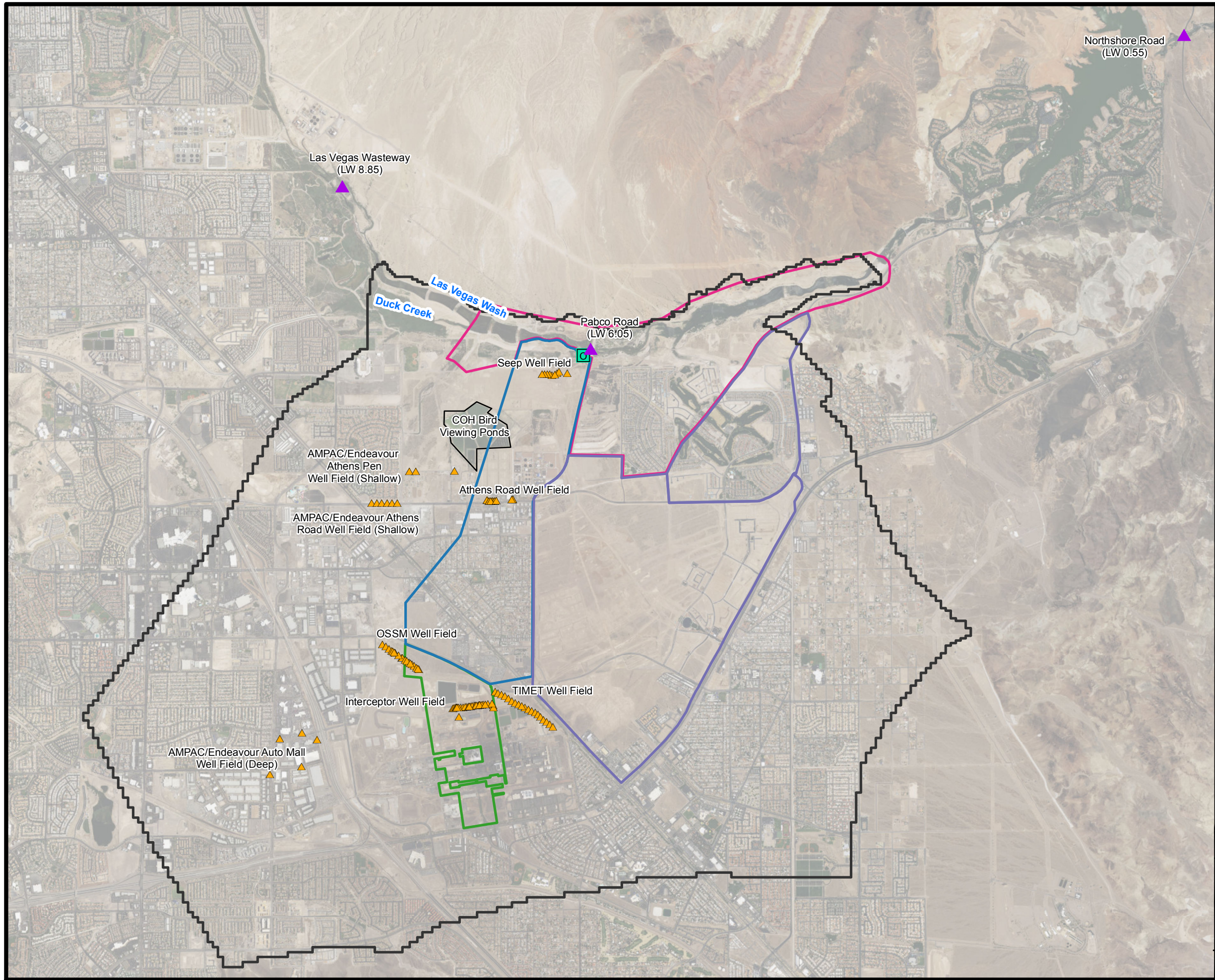
- Legend**
-  Downgradient Study Area
 -  Eastside Study Area
 -  NERT Site
 -  NERT Off-Site Study Area
- 324** Perchlorate Mass Flux (lbs/d)
3.56 Chromium Mass Flux (lbs/d)

Notes:
The flux values shown represent estimated net vertical flux.
lbs/d= pounds per day



Vertical Mass Flux Estimates
Nevada Environmental Response Trust Site
Henderson, Nevada

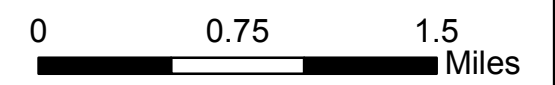
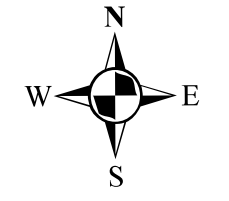
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| Date: 12/5/2017 | Contract Number: 21-41400A | Figure 5 |
| Drafter: AS | Approved: | Revised: |



Legend

- ▲ Extraction Wells
- ▲ USGS Stream Gage Station
- NERT/TIMET/AMPAC/Endeavour Outfall
- Phase 5 Model Boundary
- Downgradient Study Area
- Eastside Study Area
- NERT Off-Site Study Area
- NERT Site

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Las Vegas Wash Sample Locations
 Nevada Environmental Response Trust Site
 Henderson, Nevada

| | | |
|--------------------|-------------------------------|----------|
| Date: 12/5/2017 | Contract Number: 21-41400A | Figure |
| Drafter: AS | Approved: | Revised: |
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