



Department of Energy

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SEP 14 2017

Mr. Brian Begley
Federal Facility Agreement Manager
Division of Waste Management
Kentucky Department for Environmental Protection
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

PPPO-02-4436108-17

Ms. Julie Corkran
Federal Facility Agreement Manager
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Dear Mr. Begley and Ms. Corkran:

PADUCAH FEDERAL FACILITY AGREEMENT—SIGNED MEMORANDUM OF AGREEMENT FOR RESOLUTION OF FORMAL DISPUTE FOR THE APPENDIX C—WATER POLICY ACTIONS, ADDENDUM TO THE FIVE-YEAR REVIEW FOR REMEDIAL ACTIONS AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY (DOE/LX/07-1289&D2/R1/A2/R1)

Please find enclosed the signed Memorandum of Agreement for Resolution of Formal Dispute for the Appendix C—Water Policy Actions, Addendum to the Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-1289&D2/R1/A2/R1.

The U.S. Department of Energy appreciates the efforts of the U.S. Environmental Protection Agency and the Kentucky Department for Environmental Protection in resolving this formal dispute.

If you have any questions or require additional information, please contact me at (270) 441-6862.

Sincerely,

A handwritten signature in black ink, appearing to read "Tracey Duncan", is written over a faint, larger version of the signature.

Tracey Duncan
Federal Facility Agreement Manager
Portsmouth/Paducah Project Office

Enclosure:

Signed Memorandum of Agreement

e-copy w/enclosure:

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MEMORANDUM OF AGREEMENT FOR RESOLUTION OF FORMAL DISPUTE
for the *Appendix C – Water Policy Actions*,
Addendum to the Five-Year Review for Remedial Actions,
at the
Paducah Gaseous Diffusion Plant, Paducah, Kentucky
(DOE/LX/07-1289&D2/R1/A2/R1)

Background

On September 30, 2014, the U.S. Environmental Protection Agency (EPA) informed the U.S. Department of Energy (DOE) that EPA did not concur with the protectiveness statement (“short-term protective”) for the Water Policy Removal Action set forth in DOE’s *Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/LX/07-1289&D2/R1). Based on the Five Year Review and additional data provided by DOE, EPA issued a “protectiveness deferred” determination and required DOE to take additional actions to demonstrate the protectiveness of the remedy consistent with EPA’s *Comprehensive Five-year Review Guidance* [OSWER Dir. No. 9355.7-03B-P June 2001]. It was expected that the additional actions would be completed within 1.5 years (March 2016) of EPA’s non-concurrence letter, after which EPA would make a revised protectiveness determination.

On March 30, 2016, DOE submitted the draft *Appendix C – Water Policy Actions, Addendum to the Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-1289&D2/R1/A2 (Addendum), which reported the additional actions taken by DOE to demonstrate protectiveness of the remedy. On October 26, 2016, in response to comments from EPA and the Kentucky Department for Environmental Protection (KDEP), DOE issued a revised report (DOE/LX/07-1289&D2/R1/A2/R1). On November 17, 2016, pursuant to Section XX, Review/Comment on Draft/Final Documents, and Section XXX, Five Year Review, of the Paducah Gaseous Diffusion Plant (PGDP) Federal Facility Agreement (FFA), EPA issued five Conditions for approval of the Addendum. The KDEP approved the Addendum on November 22, 2016.

Pursuant to Section XXV.A, Informal Dispute, of the PGDP FFA, DOE invoked informal dispute resolution on December 19, 2016, regarding Conditions 1, 3, 4, and 5 of EPA’s conditional concurrence. The FFA parties, in good faith, conducted a period of informal dispute resolution under Section XXV.A, Informal Dispute, of the FFA. However, a mutually acceptable resolution on the Conditions was not reached.

On June 13, 2017, pursuant to Section XXV.B, Formal Dispute, of the FFA, DOE elevated the 4 EPA Conditions to the Dispute Resolution Committee (DRC) for resolution. The DRC reached a mutually acceptable resolution of all disputed Conditions during the formal dispute period.

Resolution Terms and Conditions

The undersigned agree that the Dispute invoked by DOE is hereby resolved. The terms of the memorandum of agreement for resolution of this dispute (MOA) are set forth below.

- DOE shall incorporate resolution of EPA Conditions 1, 3, 4, and 5 into the revised (D2/R1/A2/R2) *Appendix C – Water Policy Actions Addendum to the Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. The attached document entitled *Resolution of Disputed Conditions to the U.S. Environmental Protection Agency November 17, 2016, Conditions Related to the Appendix C – Water Policy Actions Addendum to the Five-Year Review for Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*,

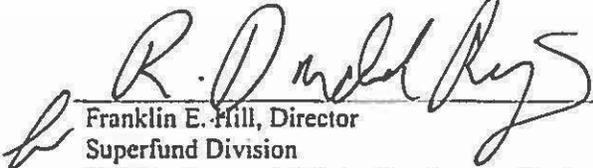
DOE/LX/07-1289&D2/R1/A2/R1, describes how Conditions 1, 3, 4 and 5 in EPA's November 17, 2016, Conditional Concurrence letter were resolved, and identifies the specific revisions to the Addendum that the FFA parties agreed shall be made by DOE in order to resolve the conditions.

- The FFA parties agree that a revised *Appendix C - Water Policy Actions* Addendum, incorporating the changes agreed to in this MOA and the resolution of the undisputed EPA Condition 2, will be submitted to EPA and KDEP for review and approval consistent with FFA Section XXX, Five Year Review, within 30 days of the last party's signature on this agreement.
- The FFA parties agree that, upon EPA and KDEP approval of the revised Addendum that incorporates the revisions described in the attachment to this MOA, EPA will re-evaluate DOE's protectiveness statement of "short-term protective" for the Water Policy Removal Action and EPA will issue a revised protectiveness determination for the 2013 Five Year Review of the response action.

Other Terms and Conditions

Pursuant to Section XXV.B.10 of the FFA, resolution of this dispute constitutes a final resolution of the dispute, which resolution is incorporated into, and becomes a term and condition of the FFA. Nothing in this MOA modifies other FFA Terms and Conditions or other CERCLA projects at the PGDP except as specifically stated above.

To the extent authorized under the FFA, nothing in this MOA shall prevent any of the Parties from disputing any other matters related to the afore-mentioned projects or any of the other response action projects.


Franklin E. Hill, Director
Superfund Division
U.S. Environmental Protection Agency, Region 4

09/15/2017
Date

 Edward Kincaid for
Jon Maybriar
Director, Division of Waste Management
Kentucky Department of Environmental Protection

09/03/2017
Date

JENNIFER WOODARD

Digitally signed by JENNIFER WOODARD
DN: cn=JENNIFER WOODARD, o=U.S. Government, ou=Department of Energy, email=jennifer.woodard@eop1.eop1.doe.gov, c=US
Date: 2017.09.01 09:58:21 -0500

Jennifer Woodard
Paducah Site Lead
U.S. Department of Energy, Portsmouth/Paducah Project Office

09/01/2017

Date

Attachment:

*Resolution of Disputed Conditions to the U.S. Environmental Protection Agency November 17, 2016,
Conditions Related to the Appendix C – Water Policy Box Addendum to the Five-Year Review for Remedial
Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-1289&D2/R1/A2/R1*

**Resolution of Disputed Conditions to the U.S. Environmental Protection Agency
November 17, 2016, conditions related to the *Addendum to the Five-Year Review for
Remedial Actions at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,*
DOE/LX/07-1289&D2/R1/A2/R1
August 30, 2017**

Resolution of EPA Condition 1

Revise page C-3 of the Addendum, and elsewhere in Appendix C as needed for internal consistency, to read as follows:

DOE will coordinate future annual educational fact sheets with EPA/Kentucky Department for Environmental Protection (KDEP) by providing a copy of the educational fact sheet seven calendar days in advance of mailing. Should EPA/KDEP require additional review time, EPA/KDEP will make a timely request within the seven day review period. Annual education fact sheets will be prepared during the first quarter of each calendar year, unless another time is agreed to by the Federal Facility Agreement (FFA) parties. Comments received will be addressed, as appropriate, prior to issuing the fact sheet to the public.

Resolution of EPA Condition 3

Revise Attachment C2 as follows (text in red is the revision):

1.2 PROJECT OBJECTIVES

The objective of the field work was to collect first-available water samples from locations within the Water Policy Area near residences located near/above the TCE plumes. Figures 1 and 2 presents a-maps of the RGA TCE plumes and the four boring locations (NW1, NW2, NE1, and NE2) sampled to complete this study. The water samples would be analyzed for selected VOCs per the SAP. Analytical results were compared to the respective default Vapor Intrusion Screening Level (VISL) for groundwater from the VISL Calculator (VISL values) (EPA 2014b). If groundwater data for selected VOCs are less than the VISL or nondetect, then no additional groundwater sampling is needed and the vapor intrusion pathway does not pose a concern for the residence.

1.3 PROJECT APPROACH

The approach agreed to by the FFA parties to meet the project objective of this vapor intrusion screening study was as follows.

- Advance Direct Push Technology (DPT) rods into the UCRS to allow collection of water from the first-available UCRS depth.
- Sample groundwater from the first available UCRS depth and analyze for VOCs.

- Compare groundwater analytical results to the respective default VISL for groundwater calculated using the VISL Calculator (EPA 2014b).
- Groundwater samples were to be collected from first-available water from four locations within the Water Policy Area near the residences located near/above the TCE Plume. Samples were to be taken within 100 ft. laterally, where possible, and not further than 300 ft. from the residence for the study.

~~The 2014 TCE Plume contours were used in conjunction with groundwater monitoring well results that were $< 5\mu\text{g/L}$ and $< 1\mu\text{g/L}$ or nondetect (Figure 1) to select the residences to be sampled.~~

~~Figure 1 presents a map of the privately-owned parcels located near/above the TCE contamination in groundwater on the west side of the Water Policy Area. A review of the privately-owned parcels indicated there were three parcels located near/over the TCE contamination area and only one of those included a structure with living quarters. Additionally, there was one structure with living quarters on the West Kentucky Wildlife Management Area owned by the Commonwealth of Kentucky over the TCE contamination area. These two structures with living quarters were chosen for locating the two boring locations (NW1 and NW2).~~

~~Figure 2 presents a map of the privately-owned parcels located near/above the TCE contamination in groundwater on the east side of the Water Policy Area. A review of the privately-owned parcels indicated there were thirteen parcels (10 owners) located near/over the TCE contamination area. The parcel overlying the TCE contamination contained three structures with living quarters in close proximity to each other. One boring location was utilized to represent all three structures (NE1). A second parcel chosen for evaluation contained one structure with living quarters and a boring was sampled near the structure (NE2). There were seven other parcels with living quarters identified; however, previous groundwater data indicated the contamination was less than the VISL screening level of $1.2\mu\text{g/L}$ for groundwater from the VISL values (EPA 2014b). In accordance with the sampling plan, further screening of these properties for vapor intrusion was not necessary. The NE2 boring represented similar conditions for all the other parcels with living quarters.~~

~~Consistent with EPA guidance, parcels with TCE trend data below the residential VISL of $1.2\mu\text{g/L}$ were not included in the screening study. Figures 1 and 2 include 2014 groundwater sample collection points where results for TCE showed less than $1.2\mu\text{g/L}$ and less than $5\mu\text{g/L}$. The figures also illustrate the location of the TCE plume in 2014 based on data above the Maximum Contaminant Level of $5\mu\text{g/L}$ for drinking water. Properties with structures located at or beyond the selected vapor intrusion sampling locations (NW1 and NW2 on the west and NE1 and NE2 on the east sides of the Water Policy Area, representing the potential “worse case” scenario for vapor mitigation from groundwater to structures) would not likely overlie areas of the TCE plume that exceed the TCE VISL screening level of $1.2\mu\text{g/L}$; which supports the rationale for not sampling other properties within the Water Policy Area.~~

The *Trichloroethene and Technetium-99 Groundwater Contamination in the Regional Gravel Aquifer for Calendar Year 2014 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, PAD-ENR-0146, states that all data for the 2014 TCE Plume map were extracted from the Paducah Oak Ridge Environmental Information System database. The map for calendar year 2014 is based on analytical results from the most recent sampling event (primarily January–December 2014). Where collocated monitoring wells (i.e., clustered wells or multiport wells) provide analytical results for the calendar year from screened intervals at multiple elevations within the RGA (e.g., upper, middle, and/or lower RGA), the maps use the value from the interval that has the highest concentration. Data from sampling in 2013 have been used, as necessary, to supplement the 2014 information and aid in plume delineation. This data set, as described, is the source of the TCE data shown on Figures 1 and 2.

3.2 CONCLUSIONS

...Based on the results of this vapor intrusion screening study (see Figures 11 and 12), historical information provided/referenced in the SAP, and the vapor intrusion guidance (EPA 2015b), an additional vapor intrusion study (i.e., a detailed investigation) is not warranted in the Water Policy Area at the time of this study. Because this study was designed to investigate the residences with the greatest potential for vapor intrusion, it is not likely that other residences in the water policy area currently have vapor intrusion concerns.

DOE will continue to evaluate groundwater conditions in the Water Policy Area in a manner consistent with five-year reviews for remedial actions required under Section 121(c) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and final remedial actions required under Section XXX of the FFA. Results of these periodic evaluations will be used to determine if a detailed vapor intrusion study is warranted.

Conforming Changes as a result of the revisions identified above:

Figures subsequent to the new Figures 1 and 2, which replaced Figure 1, will be renumbered, along with updates to the Table of Contents and figure callouts.

Resolution of EPA Condition 4

Attachment C3, *Demonstrate No Groundwater Usage*, includes two figures that identify the 2014 TCE Plume Map depicted at 5 µg/L. This is the MCL for drinking water. This evaluation was performed to demonstrate that residents were not drinking contaminated groundwater above the drinking water standard of 5ug/L. As a result the FFA parties agreed that the plume map portions of the figures will remain at 5 µg/L and evaluation of additional parcels is not warranted to satisfy the requirement to demonstrate that all residents located above the contaminated groundwater plume are not using groundwater from their wells.

The entire document was searched and the only instance of the term cited as “affected properties” that remained in the revised document submitted on October 26, 2016, is in the title of Figure 2, in Attachment C3. This should have been revised when conforming changes were made.

Based on further review of Attachment C3 in response to conditions, DOE will revise Attachment C3 as follows:

- 1) Rename Figure 2 to Figure 2. Privately-Owned Parcels Over or Immediately Downgradient of the TCE Contamination at or above 5 µg/L.
- 2) Correct erroneous Figure 9 title to Figure 9. Property 3 Aerial View—Monitoring Well on Adjoining Property
- 3) Correct erroneous Figure 15 to Figure 15. Property 5 Aerial View—Old Barn
- 4) Correct erroneous Figure 31 title to Figure 31. Property 13 Aerial View—Well House near Residence

Resolution of EPA Condition 5

Conditions 1, 3, and 4 have been satisfied by the resolutions identified above. Condition 2 (target date for DOE of mailing of annual educational fact sheet) was not disputed and the resolution to Condition 1 satisfies the requirements of Condition 2. Therefore, Condition 5 is satisfied and no change to the protectives statement on page C-4 is required.

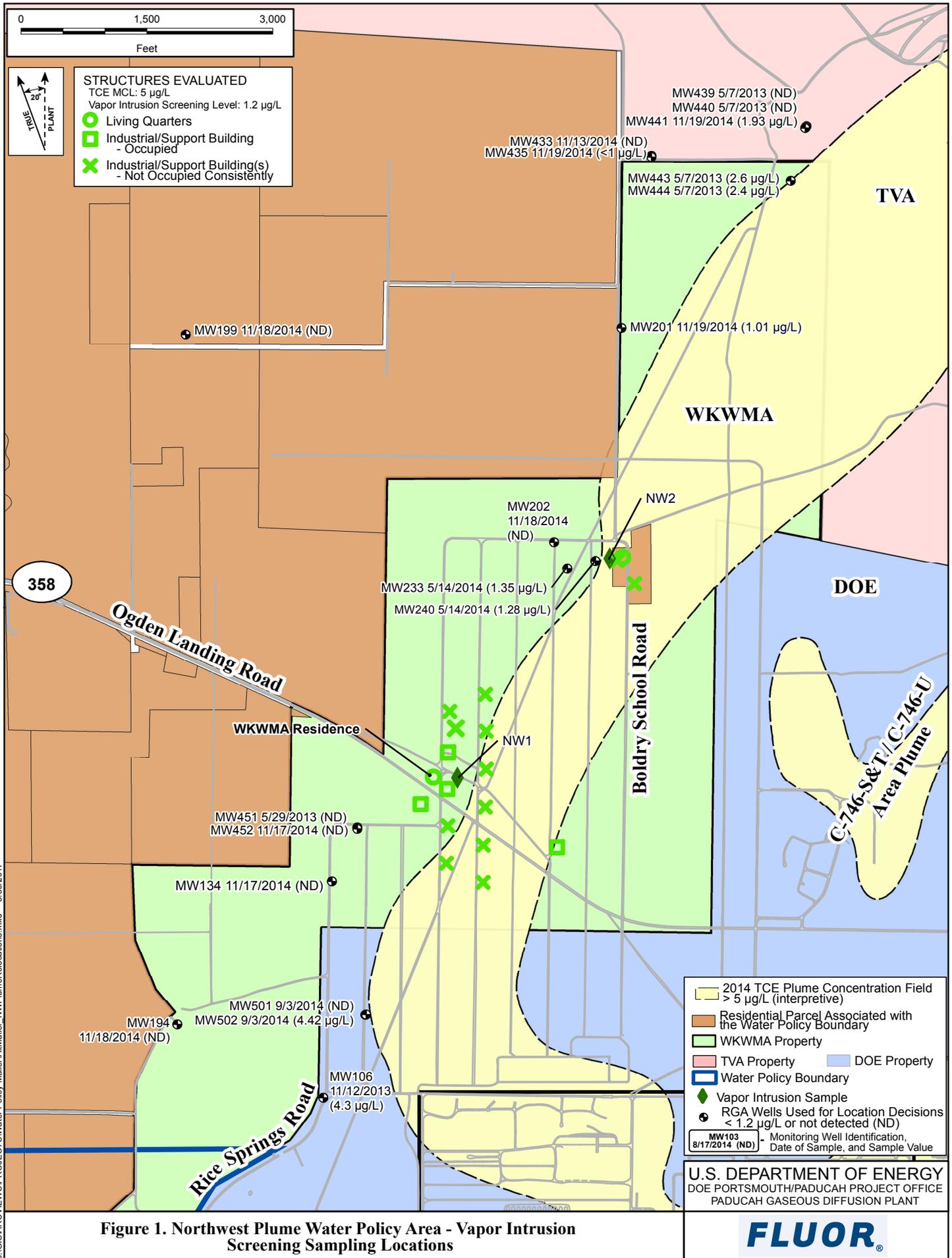


Figure 1. Northwest Plume Water Policy Area - Vapor Intrusion Screening Sampling Locations



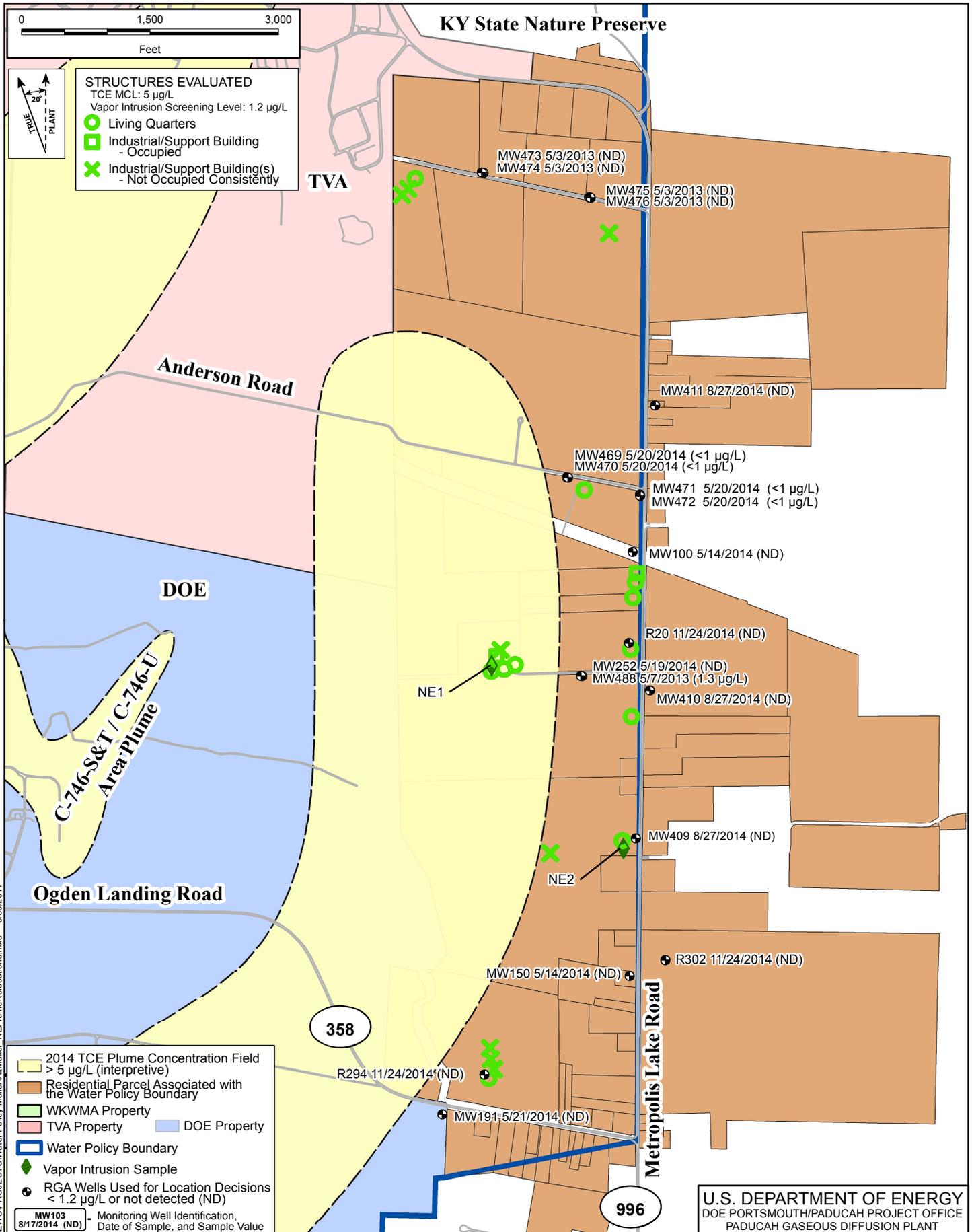
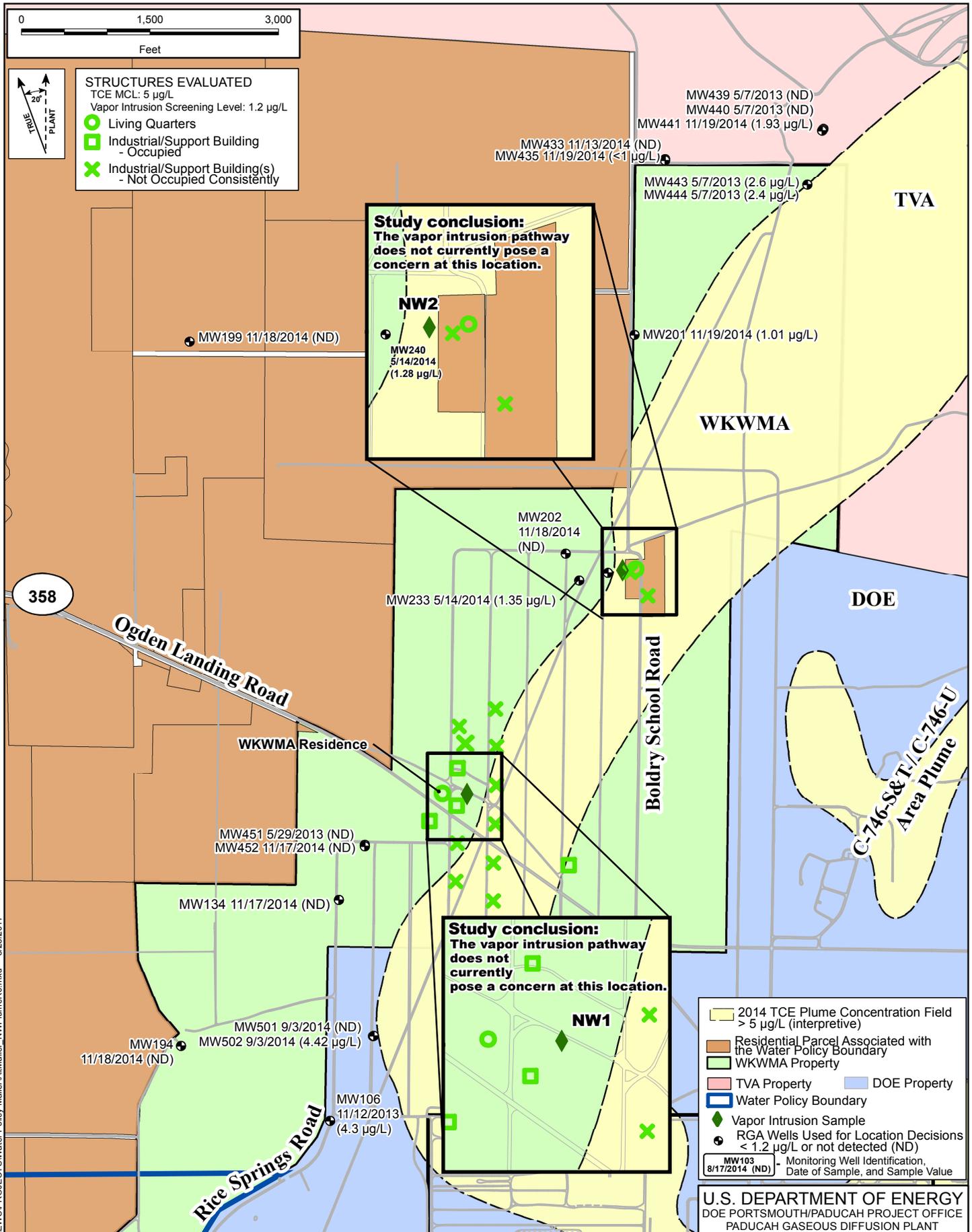


Figure 2. Northeast Plume Water Policy Area - Vapor Intrusion Screening Sampling Locations

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PADUCAH GASEOUS DIFFUSION PLANT



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Figure 11. Northwest Plume Water Policy Area - Vapor Intrusion Screening Results



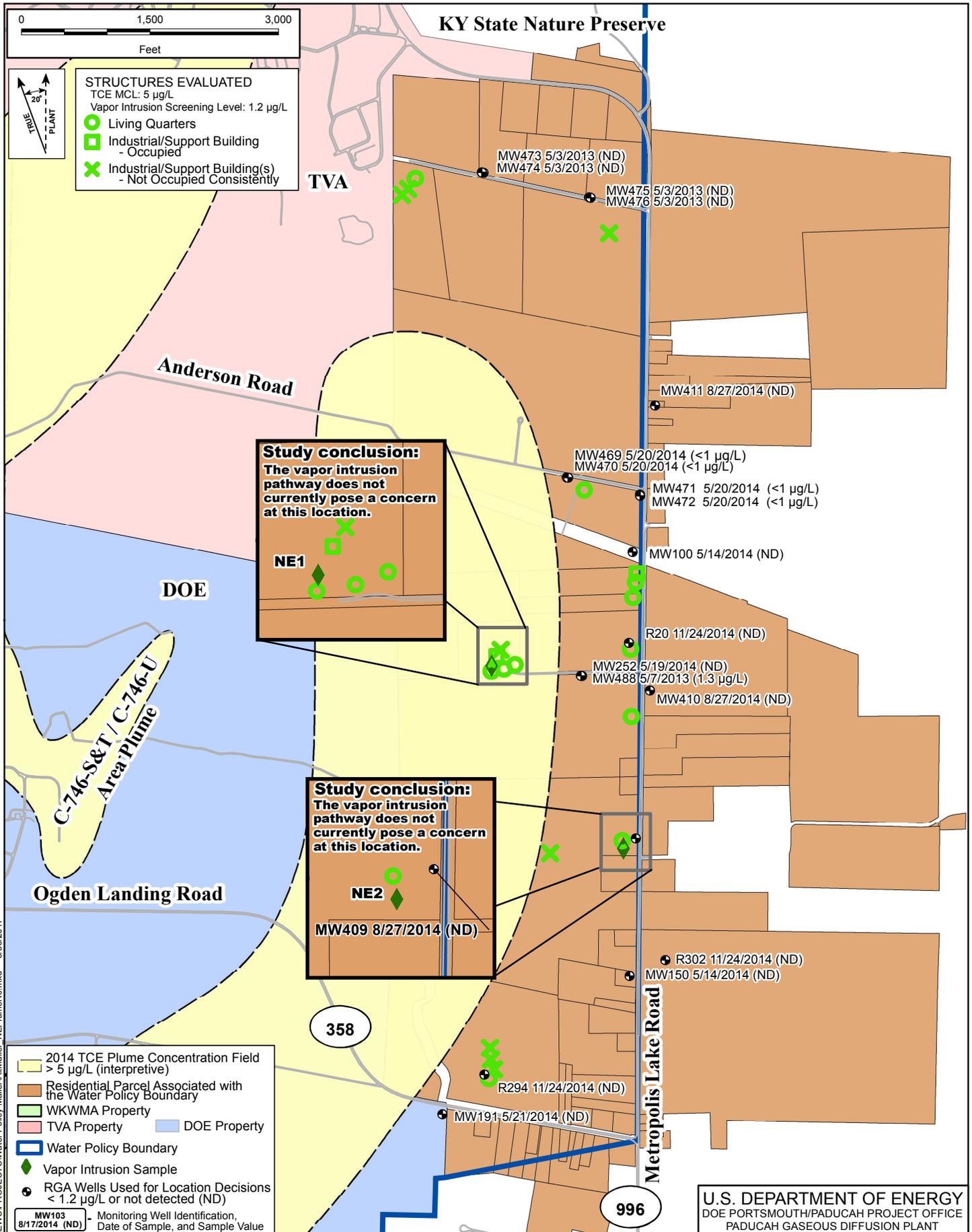


Figure 12. Northeast Plume Water Policy Area - Vapor Intrusion Screening Results

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