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Mailing Address 5505 Hobbs Road Kevil Ky 42053
Organization Fluor Federal Services, Inc
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Document Title/Date DISPOSITION OF CONTAMINATED WATER COLLECTED FROM THE BASEMENT
OF THE C-410 COMPLEX AT THE PADUCAH GASEOUS DIFFUSION PLANT
Author Jennifer Woodard Corporate Author DOE
Media (Check all that apply)
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Other/Comments _____

DC RH. Watson Date 9-3-15
TIO RH. Watson Date 9-3-15
Reviewing Official² RH. Watson Date 9-3-15

¹ Provide exemption number and category; contact CO prior to use of circumvention of statute.
² Signature of UCNI Reviewing Official required for documents containing information in UCNI subject area.

OPSEC

R.H. Watson

Date 9-3-15



Department of Energy

Portsmouth/Paducah Project Office
1017 Majestic Drive, Suite 200
Lexington, Kentucky 40513
(859) 219-4000

AUG 04 2015

RECEIVED

By K. Mitchell at 10:15 am, Sep 16, 2015

Mr. Jon Richards
Remedial Project Manager
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street
Atlanta, Georgia 30303

PPPO-02-2932877-15

Ms. April Webb
Acting Interim Federal Facility Agreement Manager
Division of Waste Management
Kentucky Department for Environmental Protection
200 Fair Oaks Lane, 2nd Floor
Frankfort, Kentucky 40601

Dear Mr. Richards and Ms. Webb:

DISPOSITION OF CONTAMINATED WATER COLLECTED FROM THE BASEMENT OF THE C-410 COMPLEX AT THE PADUCAH GASEOUS DIFFUSION PLANT

Reference: Letter from J. Corkran to J. Woodard, "EPA Revised Memorandum of Agreement Proposal-Disposition of Contaminated Water Collected from the Basement of the C-410 Complex at the Paducah Gaseous Diffusion Plant," dated July 8, 2015

The purpose of this letter is to document the U.S. Department of Energy (DOE) agreement with the U.S. Environmental Protection Agency (EPA) and the Commonwealth of Kentucky regarding the disposition of contaminated water collected in a basement of the C-410 Complex at the Paducah Site. DOE has agreed to treat the water prior to discharge and has elected to discharge the water directly to the internal plant ditches. DOE has attached the signed Memorandum of Agreement (MOA) to reflect this agreement and a map depicting the route the treated C-410 water will follow.

In an effort to bring the C-410 project to completion, DOE has agreed with the attached MOA even though it does not contain key elements that are important to DOE. First, the MOA does not recognize that DOE is taking this action voluntarily. Based on the DOE's calculations, discharge of the C-410 water without treatment does not present an imminent and substantial endangerment to public health or welfare or the environment. The proposed discharge is below the applicable or relevant and appropriate requirement approved for this project [10 *CFR* § 20.130(a)(1); 902 *KAR* 100.019 §10(1)]. In addition, discharge of the C-410 water without treatment would be within the acceptable Comprehensive Environmental Response, Compensation, and Liability Act risk range and would not exceed any other activity or dose-

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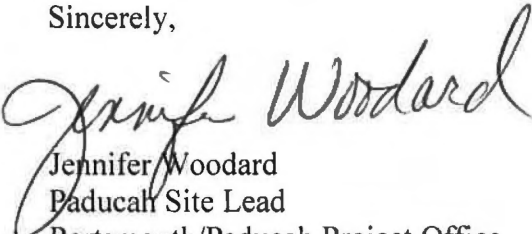
based regulations or guidance for radionuclide releases.¹ As such, it is DOE's position that this action is being done voluntarily as a Best Management Practice.

Secondly, the MOA omits the FFA parties' understanding that no additional actions related to the removal, treatment, and disposition of the contaminated C-410 water will be required beyond activities addressed in the agreement. In the reference letter, EPA acknowledged that once the C-410 water is dispositioned, no scenario could be identified that would require additional action; as such, it is acceptable not to include the clause.

Lastly, EPA's revised proposal removed, from the draft MOA, the clause that requires EPA to provide the technical analysis (including calculations) that supports EPA's claim that DOE's original plan to discharge the collected water directly "...may present an imminent and substantial endangerment to public health or welfare or the environment." DOE has requested multiple times that EPA provide the basis for its determination that discharge of the C-410 water may present an imminent and substantial endangerment to human health or the environment. To date, EPA has not provided such information. In the reference letter, EPA stated that "the EPA Region 4 Paducah team is prepared to support an FFA Stop Work Order retrospective, outside of the C-410 MOA if requested/directed by EPA Region 4 Senior Managers, including a discussion of the FFA stop work language and a discussion of imminent and substantial endangerment technical analysis/calculations, to enhance three-party understanding." Given EPA's affirmative, written representation that such data/calculations exist, DOE will be sending a letter to EPA Region 4 Senior Managers. This letter will request EPA provide this information in writing and facilitate a meeting between the three parties.

If you have any questions or require additional information, please contact me at (270) 441-6820.

Sincerely,



Jennifer Woodard
Paducah Site Lead
Portsmouth/Paducah Project Office

Enclosures:

1. Signed Memorandum of Agreement (MOA)
2. Map C-410 Treated Water Discharge Route

¹ These standards include the 60,000 pCi/L effluent limit for technetium-99 (Tc-99) that EPA approved in the Paducah Gaseous Diffusion Plant Southwest Plume MOA and at the Maxey Flats Superfund Site in Kentucky, 902 KAR 100:019 (44) Table II; 10 CFR Part 20 Appendix B; the 12 mrem guidance that EPA recently issued, *Radiation Risk Assessment at CERCLA Sites: Q&A OSWER No. 9200.4-40*, May 2014; and DOE's Derived Concentration Standards for Tc-99 and uranium isotopes. In addition, the proposed discharge presents no threat to on-site workers.

e-copy w/enclosures:

april.webb@ky.gov, KDEP/Frankfort
brian.begley@ky.gov, KDEP/Frankfort
corkran.julie@epa.gov, EPA/Atlanta
ffscorrespondence@ffspaducah.com, FFS/Kevil
gaye.brewer@ky.gov, KDEP/PAD
jennifer.woodard@lex.doe.gov, PPPO/PAD
john.kelly@ffspaducah.com, FFS/Kevil
jon.maybriar@ky.gov, KDEP/Frankfort
leo.williamson@ky.gov, KDEP/Frankfort
mark.duff@ffspaducah.com, FFS/Kevil
mike.guffey@ky.gov, KDEP/Frankfort
myrna.redfield@ffspaducah.com, FFS/Kevil
pad.dmc@swiftstaley.com, SSI/Kevil
reinhard.knerr@lex.doe.gov, PPPO/PAD
richards.jon@epamail.epa.gov, EPA/Atlanta
stephaniec.brock@ky.gov, KYRHB/Frankfort

**Memorandum of Agreement
for Disposition of C-410 Basement Water at the Paducah Site**

- The contaminated water in the C-410 Building basement (Zone 26) at the Paducah Gaseous Diffusion Plant (PGDP) will be removed by the U.S. Department of Energy (DOE) (i.e., pumped out) and treated *ex situ* at Zone 26 using proven ion exchange technology with resins capable of treating the radionuclides [i.e., technetium-99 (Tc-99) and uranium] detected in the water. The ion exchange technology will use standard industry design (off the shelf), but the system may include more than one unit that will be stacked (or run in sequence) to treat radionuclides.
- The ion exchange treatment system will be designed (based on manufacturer specifications) to achieve between 93%–98% reduction in the radionuclides detected in the contaminated water. Verification of treatment efficiency will occur at each interval in the process as explained below.
- Verification of treatment efficiency requires definition of constituent-specific baseline values. The constituent-specific baseline value for Tc-99 and uranium will be calculated as follows:
 - An in-line sampling port will be utilized to pull three samples from the first 3,000 gallons (gal) of contaminated water as it enters into the ion exchange treatment system. The three samples will be averaged to provide the constituent-specific baseline value. Radiological samples will be 3 liters of water. Samples will be collected at five minutes after treatment begins, approximately half-way through the treatment run, and within five minutes of the predicted end of the treatment run. This process will be repeated at the beginning of each interval (i.e., 0 gal, 60,000 gal, and 120,000 gal). Samples will be analyzed for Tc-99 (pCi/L) and uranium (mg/L). The data will be provided two weeks after sample collection, and the results will be shared with the Federal Facility Agreement (FFA) parties, with a follow-up meeting scheduled to discuss the results and agree on the constituent-specific baseline values (Record of Conversation, March 9, 2015). The FFA parties will make themselves readily available within 3-5 days of data receipt for the follow-up meeting.
- The first 3,000 gals of contaminated water will be treated and collected in an aboveground temporary storage tank. The treated water will be sampled at the discharge port after treatment (n=3 samples) for Tc-99 (pCi/L) and uranium (mg/L). Three samples will be averaged to create the post-treatment value for each interval (e.g., 3,000 gal, 60,000 gal, and 120,000 gal). Each sample will be 3 liters of water. DOE will receive the sampling results within two weeks of sample collection and immediately share the results with the U.S. Environmental Protection Agency (EPA) and the Kentucky Department for Environmental Protection (KDEP). No water will be discharged during that time. The FFA parties will evaluate the contaminant concentrations in the treated water and verify that treatment efficiencies are in the range of 93%–98% reduction, relative to the constituent-specific baseline.

- This verification process (through sampling a batch of treated water to verify treatment efficiencies) will be repeated after approximately 60,000 gal of the water (one-third of the water) has been treated and dispositioned and again after 120,000 gal of water (two-thirds of the water) has been treated and dispositioned. At each batch sampling interval, if constituent-specific treatment efficiency has been met for Tc-99 and uranium, DOE will disposition the treated water as explained below. The FFA parties fully expect that treatment of the contaminated waters using Best Available Technology and new ion exchange units will yield the targeted contaminant reduction efficiencies. If the constituent-specific treatment efficiencies are not met at any verification interval, then treatment and dispositioning of the C-410 basement water will stop, and the FFA parties will reconvene and decide what additional actions may be necessary to achieve the targeted treatment efficiency.
- Each batch of treated water will be discharged directly from the treatment system into the internal plant ditch system, provided that fresh Apatite material is placed in the unlined portions of the ditch system (as currently in the field—"checkdams" along the ditch) between the treatment system and the first lift station (C-400-L) to further capture and remove residual uranium and ultimately will be discharged from the C-616-F Lagoon through Outfall 001. Outfall 001 discharges to Bayou Creek.
- DOE will characterize the nature and extent of soil/sediment and surface water contamination in the future, as part of another Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) operable unit (e.g., the Surface Water Operable Unit or the Soils Operable Unit), in view of EPA and DOE selecting a final remedy for the unit (including the ditches) as summarized in the Site Management Plan.
- Once the contaminated water is removed from the C-410 basement and successfully treated, any residual solids (e.g., supernatant or sludge) in the bottom of Zone 26 will be characterized, managed, and disposed of in accordance with the action-specific applicable or relevant and appropriate regulation/requirements and TBC included in Appendix C, Table C.3, of the approved *Engineering Evaluation/Cost Analysis for C-410 Complex Infrastructure at the Paducah Gaseous Diffusion Plant*, DOE/OR/07-1952&D2/R1. This waste shall be disposed on-site at the permitted C-746-U Landfill or transported and disposed at an approved off-site waste disposal facility.
- DOE is moving forward with the action presented herein as part of the CERCLA Non-Time Critical Removal Action (*Action Memorandum Addendum for C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0273&D2, November 2009) recognizing that it addresses the concerns EPA raised in their November 26, 2014, letter.
- The conduct of this action does not establish or imply an effluent limit for radionuclide(s) discharge into the surface water at Outfall 001, nor does it establish any precedent, level, or

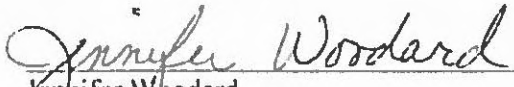
threshold that requires treatment for other discharges of radionuclides into surface water at PGDP as part of a CERCLA response action.

- The approved CERCLA documents for this project (e.g., Action Memorandum, Removal Action Work Plan) do not require modification to implement the aforementioned actions. A copy of the signed Memorandum of Agreement that incorporates this proposal, including the Attachments, will be incorporated into the C-410 Decontamination and Decommissioning Removal Action Report.
- The treatment system, aboveground storage tank, and associated connections/fittings will be maintained and monitored throughout the period of operation to ensure that there are no releases that could present risk to human health and/or the environment.
- DOE will notify EPA and KDEP once the field work begins (such as mobilization of treatment unit) and prior to initiating the pumping of the contaminated water from Zone 26 of the C-410 Basement. DOE will initiate the field work within 120 calendar days from date of the effective date of the signed Agreement.

Attachment 1: Map of C-410 treated water disposition route (including relevant description of details).

Concurrence:

DOE, EPA, and KDEP, as parties to the Paducah Federal Facility Agreement, hereby agree with the proposed action. EPA and KDEP authorize DOE to proceed with treatment and disposition of the contaminated C-410 water, as proposed.



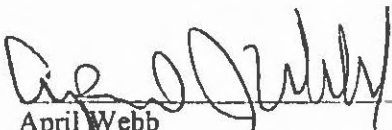
Jennifer Woodard
U.S. Department of Energy

7/30/15
Date



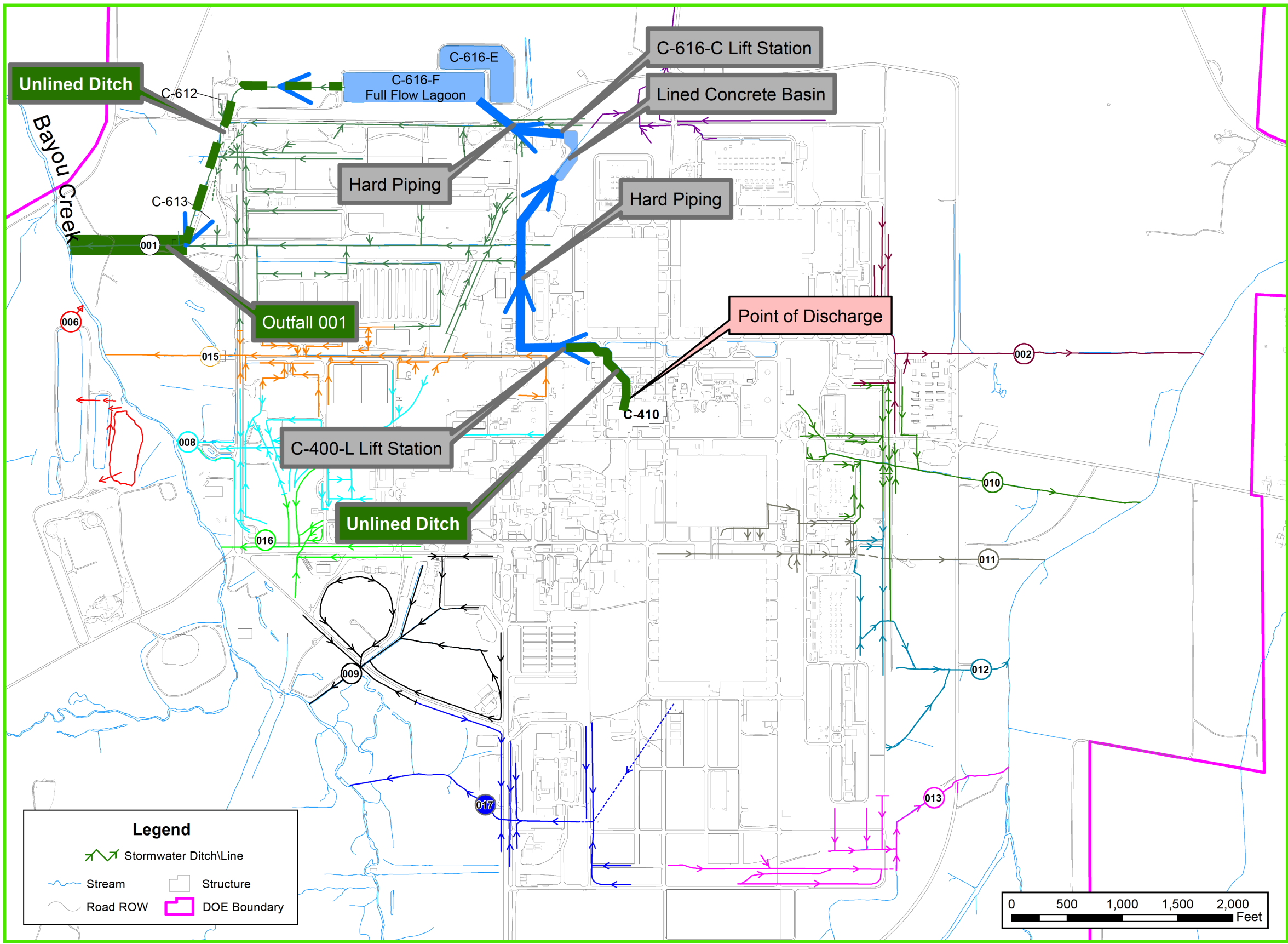
Julie Corkran
U.S. Environmental Protection Agency

7-31-2015
Date



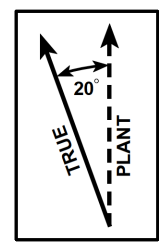
April Webb
Kentucky Department for Environmental Protection

7/31/15
Date

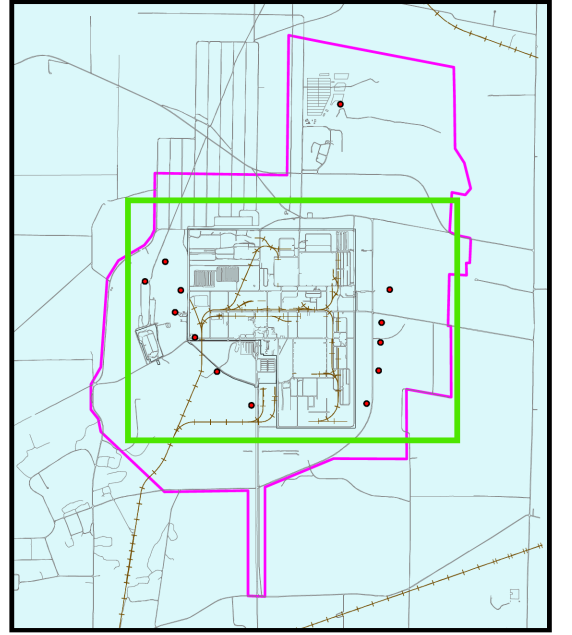


Kentucky Pollutant Discharge Elimination System (KPDES)

- 002 001, 002, 006, 008, 009, 010, 011, 012, 013, 015, 016, 019, 020* - Fluor
- 017 017 - BWCS

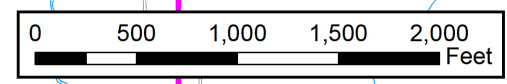


* Note: KPDES 019 & 020 are in the same location.



Legend

- Stormwater Ditch/Line
- Stream
- Road ROW
- Structure
- DOE Boundary



Attachment 1: C-410 Treated Water Discharge Route

7/30/2015

U.S. DEPARTMENT OF ENERGY
DOE PORTSMOUTH/PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT



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