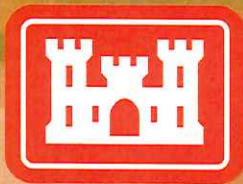


Former Fort Devens Army Installation Project Status Update

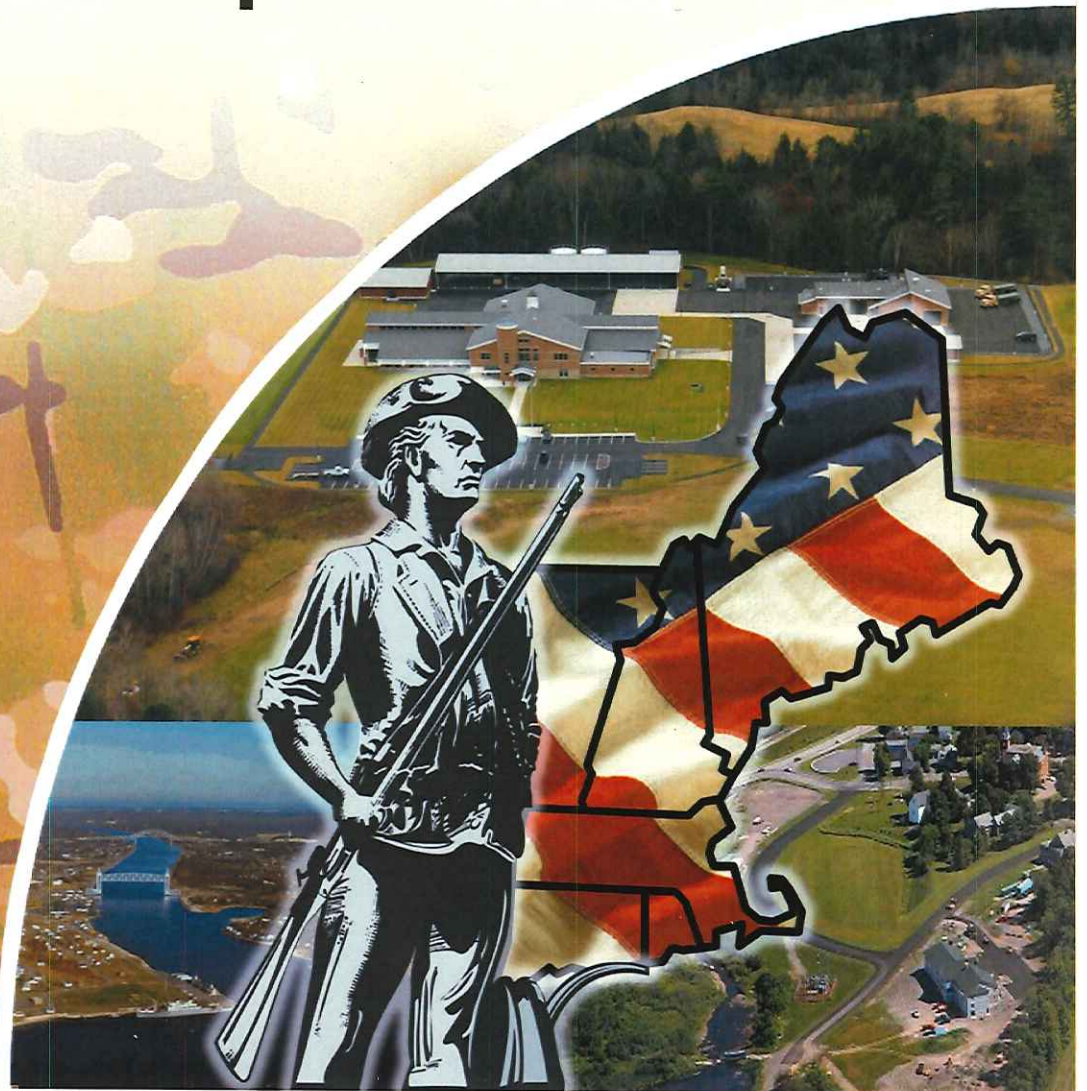


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Former Fort Devens Army Installation Project Status Background and Update

- On November 3, 2015 EPA invoked Informal Dispute Resolution to address the 2015 Devens Five Year Review
- The Informal Dispute included additional assessment and evaluation work to be performed at Fort Devens.
- EPA presented a SOW dated February 24 and March 18, 2016 addressing the additional work.
 - ▶ The February 24 SOW included addressing data gaps at Shepley's Hill Landfill through three phases of work
 - Phase I – Demonstrate capture at the treatment plant included drilling, groundwater model revisions and assessments on the SHL treatment plant performance
 - Phase II – Evaluate the existing remedy performance by adding additional wells to the LTM program and evaluating over a five year period. Also includes evaluating specific groundwater wells to determine a site specific arsenic background concentration.
 - Phase III – Document changes to the remedy if necessary in an ESD or ROD amendment



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Former Fort Devens Army Installation Project Status Background and Update

► The March 18 SOW included

- Issue 6 - Amending the 2015 Five Year review to include the Housing Areas (Grant, Oak, Maple and the 37-mm Impact Area)
- Issue 7 - Amending the 2015 Five Year review to include the DCL Landfill Contributor sites (AOC 9, AOC 40 and SA13)
- Issue 8 - Evaluation of Per and Polyfluoroalkyl Substances (PFASs) across all of Fort Devens and conduct water supply sampling for PFASs at Devens Reserve Forces Training Area and MacPherson well location

► EPA presented an enforceable milestone schedule with specific deadlines for both SOWs including all task and subtasks that the Army has complied with.



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Phase I Work

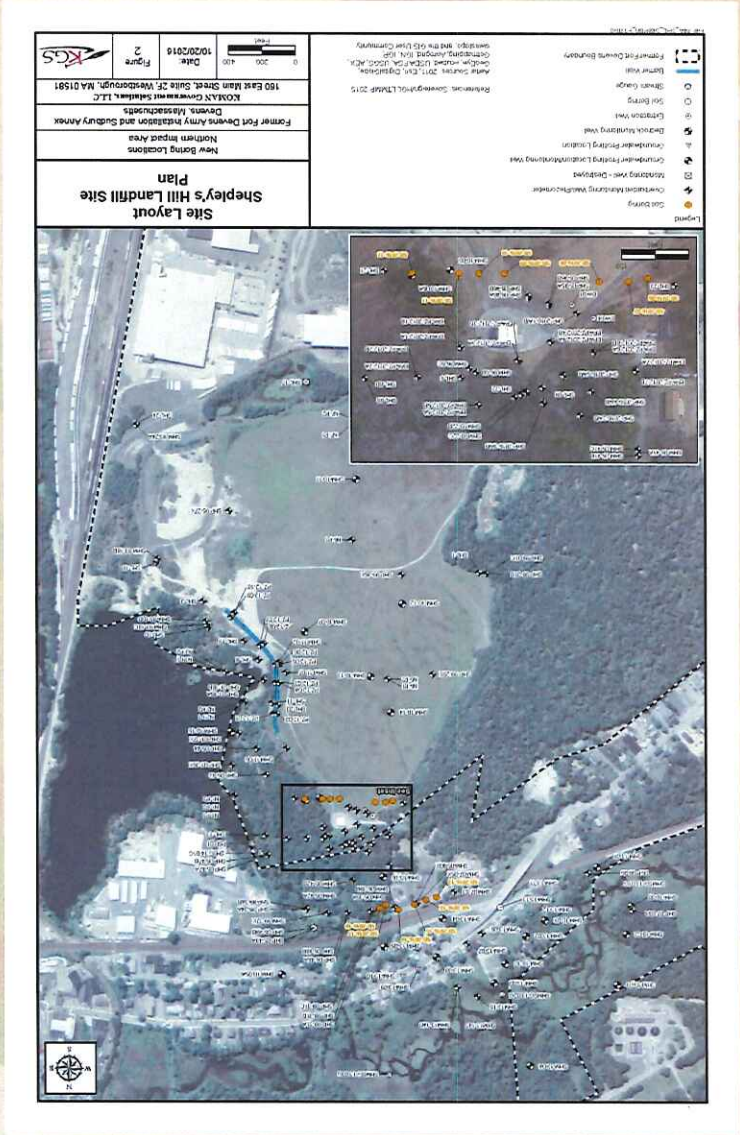
- As part of the EPA SOW Shepley's Hill Landfill Remedy Evaluation Phase I included:
 - Task 1 - Installation of five (5) piezometer pairs near the existing extraction wells to demonstrate groundwater capture.
 - Task 2 - Vertical profile sampling of seven (7) borings along transect SHL-23 and SHL-21. This delineated the presence of arsenic and other compounds upgradient of the extraction system.
 - Task 3 - Vertical profiles of six borings (6) along Scully Road to explore lateral and vertical extents of groundwater downgradient of the extraction system {along Scully Road}
 - Task 4 – Groundwater Model Update
 - Task 5 – Evaluate SHL groundwater extraction system capture by reviewing groundwater concentration trends and the revised groundwater model flow paths
 - Results indicated arsenic was present at deeper depths
 - The data show reductive dissolution occurring at depth as indicated in previous investigations.



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Sampling Locations



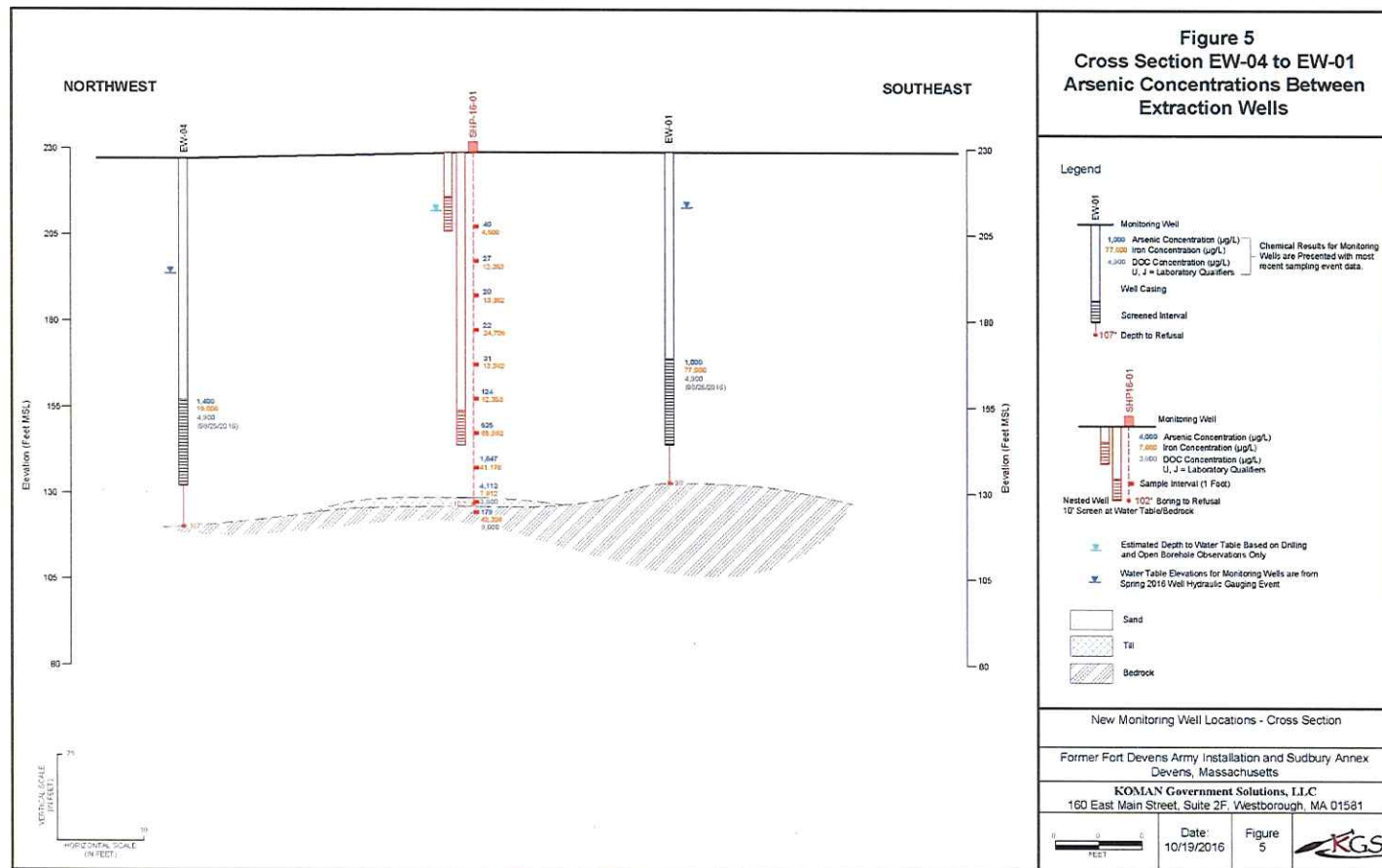
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Sampling Locations Task 1

Cross Section Between EW-01 and EW-04



Data presented in figure is currently under review by EPA and is the Army's interpretation of sampling results

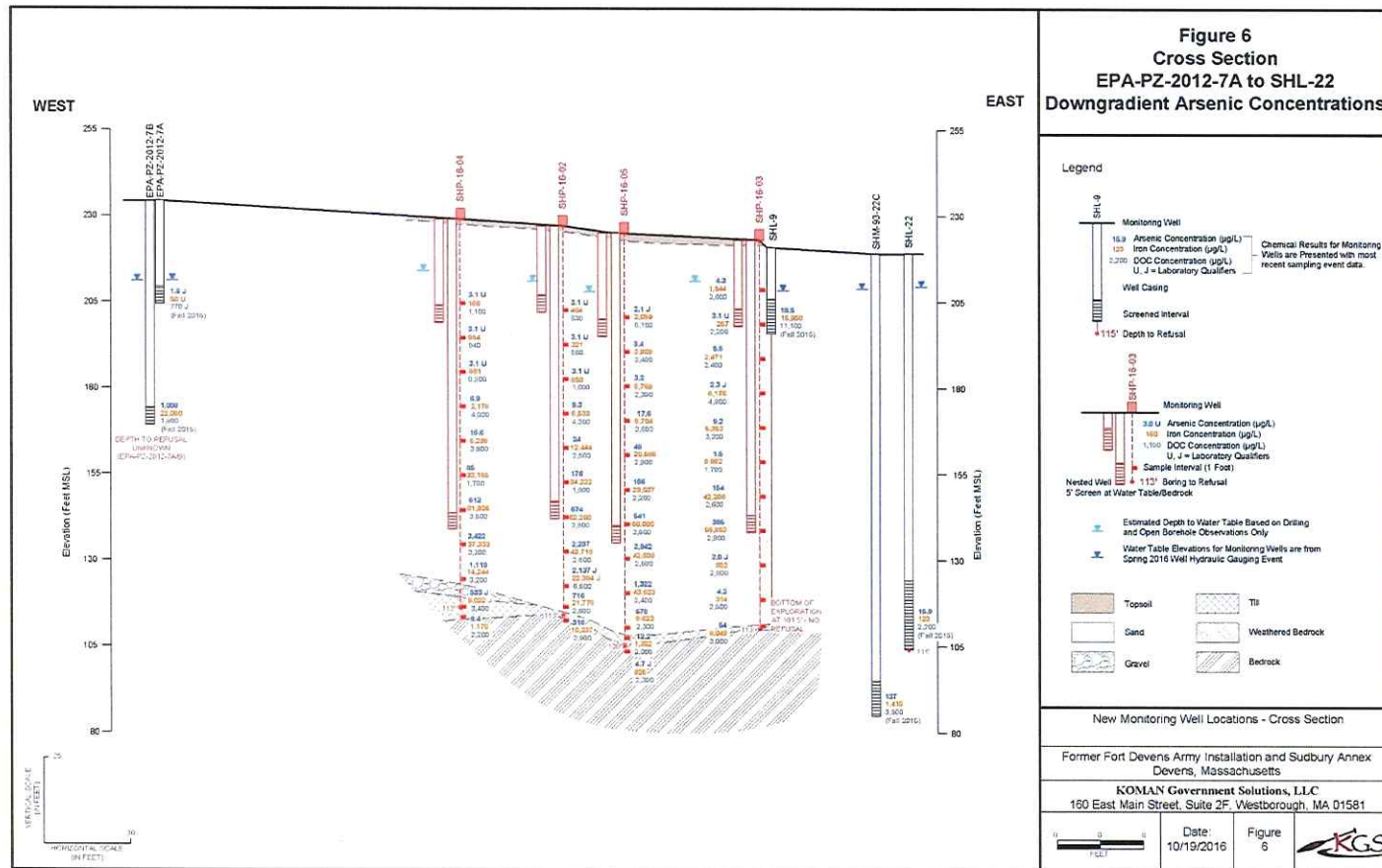


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Sampling Locations Task 1

EPA-PZ-2012-7A to SHL-22 Cross Section



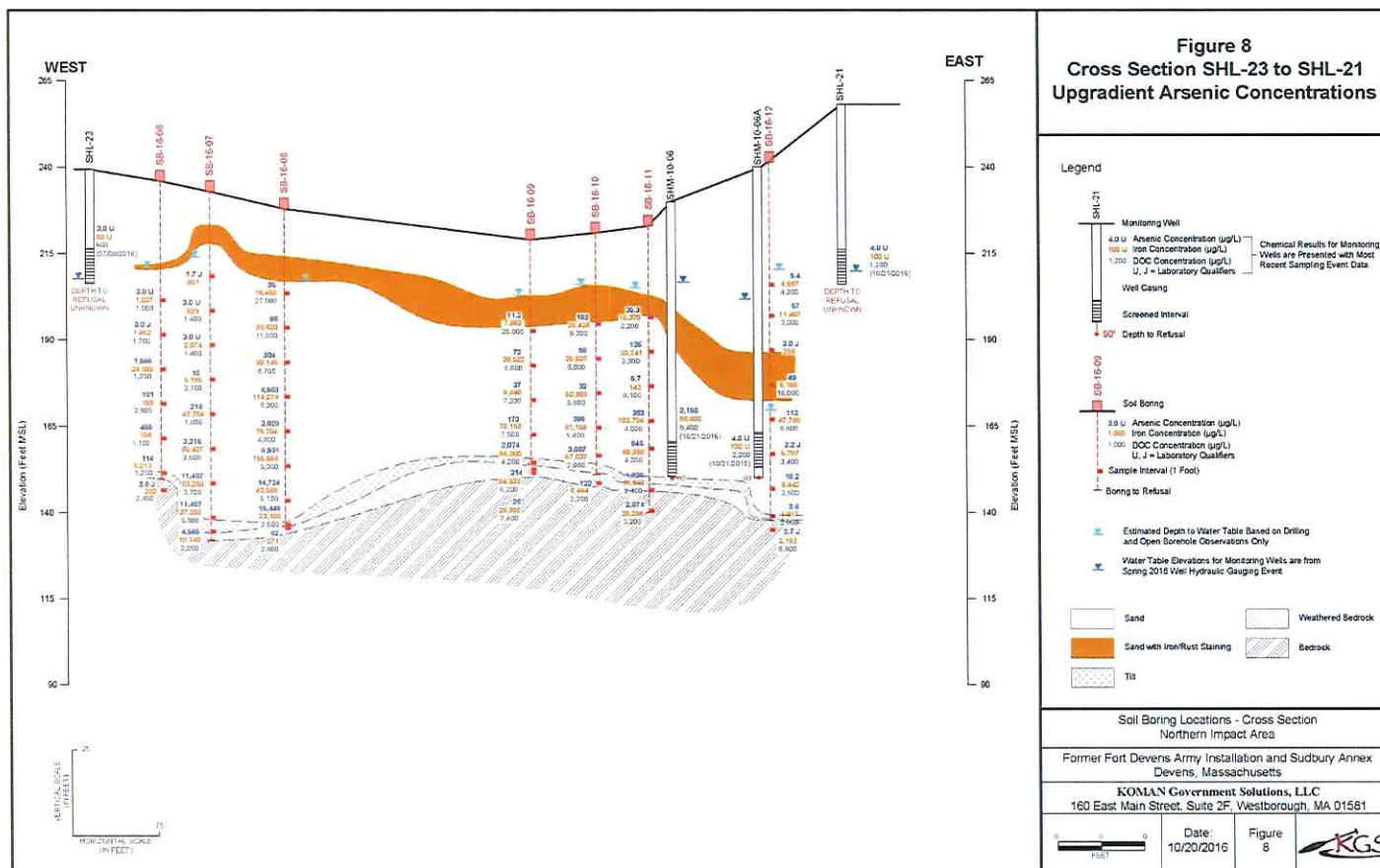
Data presented in figure is currently under review by EPA and is the Army's interpretation of sampling results



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Sampling Locations Task 2 SHL-23 to SHL-21 Cross Section



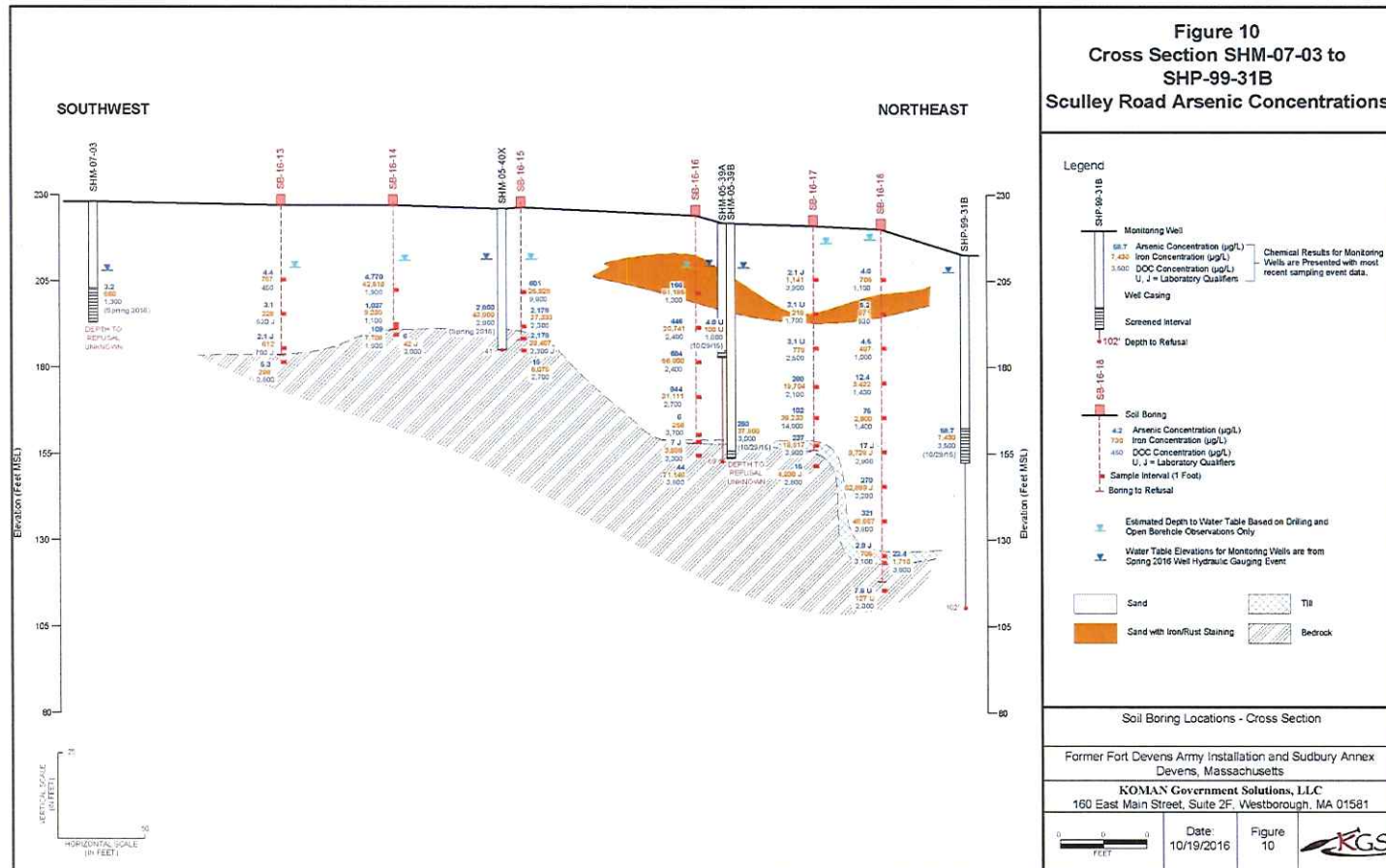
Data presented in figure is currently under review by EPA and is the Army's interpretation of sampling results



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Sampling Locations Task 3 SHM-07-03 to SHP-99-31B Cross Section



Data presented in figure is currently under review by EPA and is the Army's interpretation of sampling results



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Phase I Task 4

- As part of EPA SOW Phase I Task 4 Army received preliminary comments on the revised groundwater flow model from EPA in July.
- The Army submitted the Groundwater Model Report to EPA on October 7.
- Meeting with EPA on November 9 to discuss groundwater flow model revisions
- Draft Final groundwater flow model due to EPA November 30, 2016



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Phase I Task 5

- As part of Task 5, the Army evaluated the SHL extraction system capture extent by examining groundwater concentrations at 57 monitoring well locations and comparing them to flow paths determined by the draft groundwater flow model.
- The Army completed trend analysis and capture assessment in a draft technical memorandum to EPA on August 23.
- The Army used statistical analysis to determine if each location had increasing, decreasing or stable concentrations.
- The data indicated 10 wells were decreasing, 5 wells were increasing and 36 were stable or had no observable trend.
- Six well did not have sufficient data to be analyzed.
- This technical memorandum will be revised pending conclusions from the November 9 groundwater flow model meeting



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Preliminary Evaluation Phase I Task 5



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Data presented in figure is currently under review by EPA and is the Army's interpretation of sampling results

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Issues 6 and 7

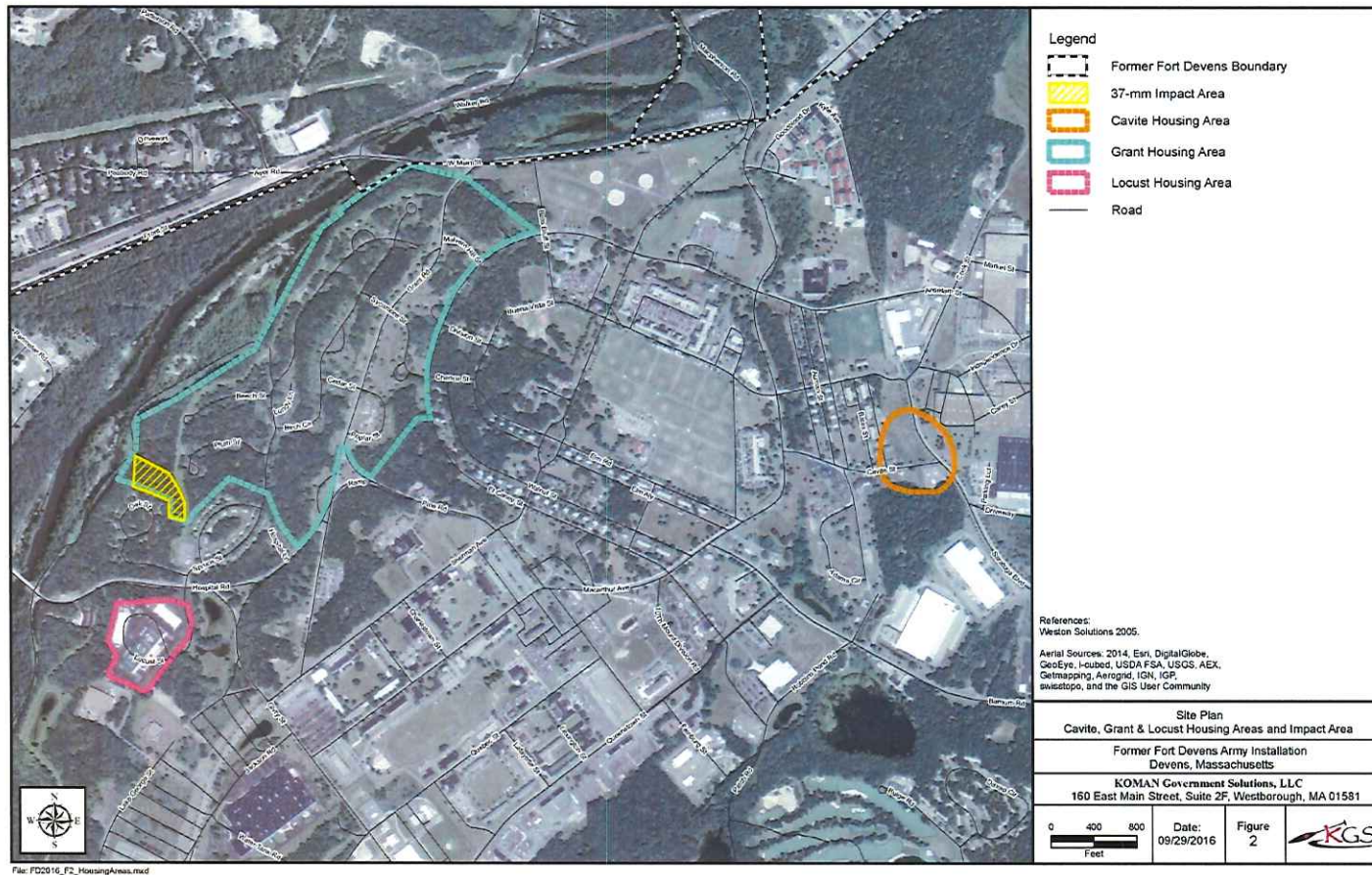
- Issue 6 - Housing Areas – Oak, Grant, Maple and 37-mm Impact Area
- Issue 7 - DCL Contributor Sites – AOC 9, AOC 40 and SA 13 were inspected and reviewed.
 - ▶ AOC 9 – historic wastewater treatment plant filter beds
 - ▶ AOC 40 – historic debris disposal area
 - ▶ SA 13 – historic debris disposal area
- The Five Year Addendums concluded
 - ▶ A risk assessment should be conducted for the DCL Contributor sites comparing the soils to MassDEP soil standards.
 - ▶ No additional action is needed at the Housing Areas as the LUCIP is conducted annually.



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Issue 6 - Housing Areas

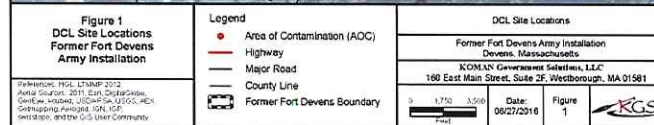
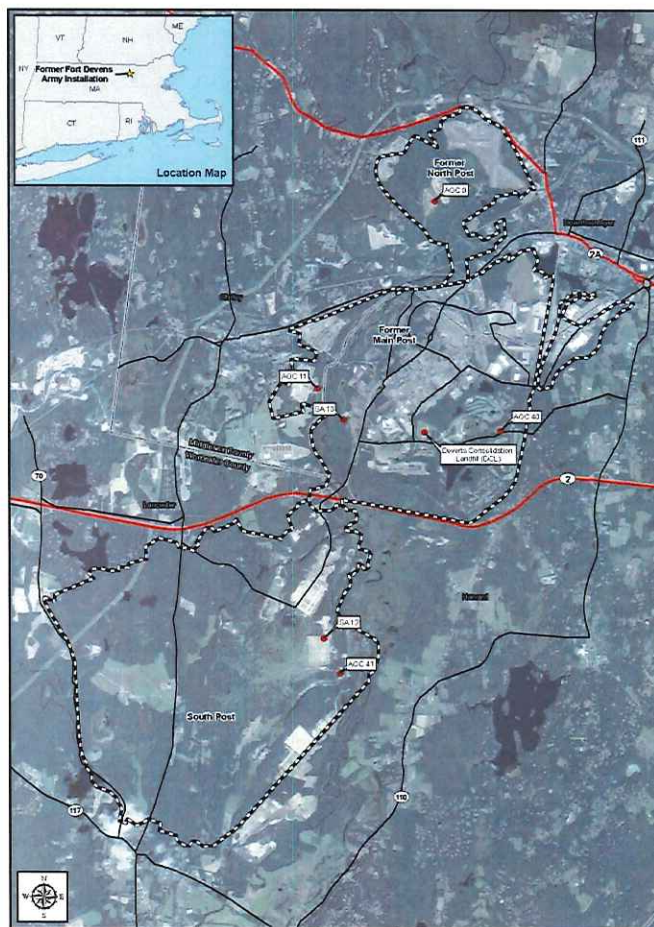


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Issue 7

DCL Contributor Sites



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Issue 8

Preliminary Assessment

- Per- and Polyfluoroalkyl Substances Chemicals (PFASs), the two most studied are Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS)
- Sampling conducted at South Post and MacPherson Well.
- Results showed not detected results for the three wells at South Post.
- Results showed PFAS compounds were detected at MacPherson, however results were below the EPA May 2016 Health Advisory of 70 parts per trillion.
- MassDEP conducted sampling at MacPherson. Their result was below the EPA Health Advisory.
- MassDEP also conducted sampling at additional water supplies including the Towns of Ayer, Devens, West Groton and Shirley. One individual Grove Pond well indicated results above the EPA Health Advisory.



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Former Fort Devens Preliminary Assessment

Table 1
Water Supply Well PFC Analytical Results
July 2016

			MacPherson Well	DUP-01 (MacPherson Well)		MacPherson Field Blank	Well 01G-062016-1100	Well 02G-062016-1020	Well 03G-062016-1132	DUP-062016-1025 (Well 02G)	FB-062016-1034				
Project Action Limit ¹			7/28/2016		7/28/2016		7/28/2016	6/20/2016	6/20/2016	6/20/2016	6/20/2016	6/20/2016			
Method	Target Compounds	CAS Number	µg/L	Result (µg/L)	U	Result (µg/L)	U	Result (µg/L)	U	Result (µg/L)	U	Result (µg/L)	U	Result (µg/L)	U
Perfluorinated Compounds (PFCs) Method 537	Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.097	U	0.1	U	0.097	U	0.041	U	0.047	U	0.043	U
	Perfluorooheptanoic acid (PFHxA)	375-85-9		0.015	J	0.011	J	0.011	U	0.021	U	0.021	U	0.024	U
	Perfluorohexanesulfonic acid (PFHxA)	355-46-4		0.054	J	0.052		0.032	U	0.021	U	0.021	U	0.021	U
	Perfluorononanoic acid (PFNA)	375-95-1		0.021	U	0.022	U	0.021	U	0.031	U	0.031	U	0.032	U
	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.07	0.044	J	0.042	J	0.042	U	0.010	U	0.010	U	0.011	U
	Perfluorooctanoic acid (PFOA)	335-67-1	0.07	0.025	J	0.024	J	0.021	U	0.095	U	0.095	U	0.110	U
	TOTAL			0.069	J	0.066	J	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

µg/L = microgram per liter

Q = Qualifier

U = Non-detect

J = Estimated Result

UJ = Estimated non-detect

¹ = Project Action Limits shown are Health Advisory Limits as specified in the May 2016 USEPA Health Advisories for PFOS and PFOA (EPA 822-R-16-004 and EPA 822-R-16-005).

TOTAL values are the combined concentrations of PFOA and PFOS, per EPA Health Advisory Fact Sheet, EPA 800-F-16-003, May 2016. Samples collected from Devens MacPherson Well, Devens Water Supply Wells 01G, 02G and 03G located at Devens Reserve Training Area.



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MassDEP Water Supply Sampling Results

	West Groton		Ayer		Mult- Finished	Devens			Shirley	
	02G	06G	07G	08G		03G (McPherson)	05G (Patton)	06G (Shabckin)	03G (Patterson)	04G (Walker)
PFOS	<0.004	<0.004	0.007	0.085	0.038	0.041	<0.004	0.004	<0.004	<0.004
PFOA	<0.002	0.006	0.009	0.018	0.01	0.021	0.004	0.004	<0.002	<0.002
Total	0	0.006	0.016	0.103	0.038	0.062	0.004	0.008	0	0

All sample results listed in table have units of parts per billion (ppb)

PFOS – Perfluorooctane sulfonic acid

PFOA – Perfluorooctanoic acid

Health Advisory – 0.070 parts per billion (ppb), equivalent to 70 parts per trillion (ppt)

Total results are a combination of PFOS and PFOA results



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Issue 8

Preliminary Assessment

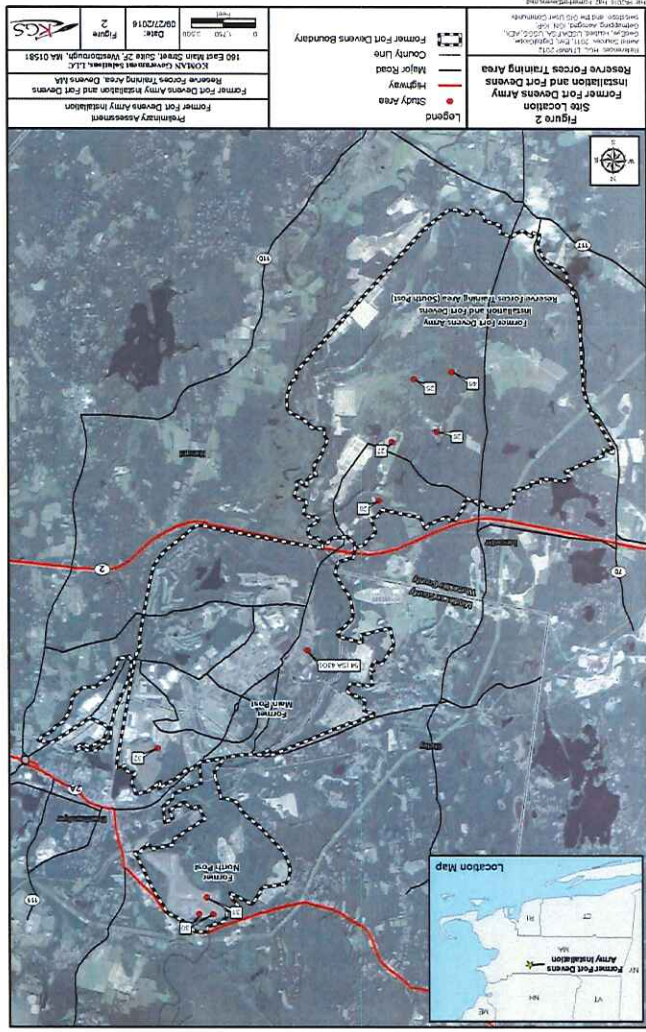
- Preliminary Assessment for Fort Devens was submitted as draft for regulatory review.
- The document reviewed all historical property use to determine where PFAS was potentially used, stored or released.
- Numerous locations across Fort Devens were evaluated including the former Moore Army Airfield (AOC 50), two study areas SA 30 and 31, South Post (SA 25, 26, 27 and 28), a former gas station (Area 54) and a training area (Area 46)
- Areas identified as those with potential use, storage or release included the former Moore Army Airfield (AOC 50) and three study areas SA 30, 31 and 32.



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Issue 8 Preliminary Assessment



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Issue 8

- The draft PA concluded additional investigation appears to be warranted at the former Moore Army Airfield (AOC 50) and three study areas (SA 30, 31 and 32).
- A Site Investigation will be conducted to further assess whether potential PFASs at these locations pose a risk to human or ecological receptors.



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Former Fort Devens Army Installation Project Status Update



■ Next Steps

- Meeting with EPA to discuss Groundwater Flow Model on November 9.
- Revisions to finalize Groundwater Flow Model by the end of 2016.
- Review and revise Phase I Task 5 technical memorandum with comments received from EPA as well as the revised groundwater model by end of 2016.
- Complete additional groundwater sampling in November 2016 to assess site specific arsenic background concentration with evaluation due in November 2017.
- Conduct additional assessment work to assess background and revise the Conceptual Site Model.
- Complete a Risk Assessment for the DCL Contributor Sites
- Conduct five years of additional LTM sampling as outlined in Phase II with conclusions due in 2021.
- Conduct SI in 2017 at Fort Devens to address potential historic PFAS use.



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Former Fort Devens Army Installation Project Status Update



- Questions?



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