

Joint Base Cape Cod Cleanup Update 2013



Cleanup Update 2013



A treatment cell used for bioremediation of explosives contaminated soil excavated from the L Range.

Keeping Informed: The JBCC cleanup programs use Web sites, public meetings, news releases, neighborhood notices, public comment periods and other publications to update community members throughout the process and to solicit their input on cleanup actions. For more information on opportunities for public comment, see Upcoming Decisions on page 8. Information on opportunities to learn more about the cleanup is on page 11.



In 2012, Air Force Center for Engineering and the Environment adopted a new organizational name (AFCEC).

Cleanup at the Joint Base Cape Cod (JBCC, formerly the Massachusetts Military Reservation) continues to move forward. Cleanup actions are underway to address most areas of groundwater contamination and efforts to select remedies for those that remain are in progress. In all cases, measures are in place to protect against exposure to unsafe levels of contamination and to make sure that public or private water supplies are not affected.

Two environmental cleanup programs at the JBCC are addressing areas of groundwater contamination, known as plumes, and their sources. One program, managed by the Air Force, is addressing contamination found primarily on the southern portion of the JBCC and south off-base, and the other, managed by the Army, is addressing contamination from the northern portion of the installation and some off-base areas. Both of these programs' efforts are being conducted with oversight from the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP).

Groundwater plumes are being addressed through treatment and monitored natural attenuation, which uses the natural process of dilution, dispersion and degradation. Treatment generally involves pumping contaminated groundwater from the aquifer, treating it using granular activated carbon, ion exchange resin, or both to remove contamination, and returning treated water to the aquifer. Both options use routine groundwater monitoring to make sure contamination is being reduced as predicted. The programs also rely on land-use controls, which include enforcement of regulations, verification/evaluation of private wells in plume areas, and other protective measures designed to prevent development or use of drinking water supplies in areas affected by the plumes.

Source areas, those areas of contaminated soil or other materials (i.e. UXO, etc.) that contributed to contamination of the groundwater, are usually addressed by removal and treatment, or off-site disposal of the soil, munitions and other items.

Installation Restoration Program

The Air Force Civil Engineer Center's Installation Restoration Program (IRP) has made all decisions on how to address contamination and the remedial actions are in place (Remedies in Place) for the groundwater plumes and source areas related to its program. The JBCC was listed to the Superfund National Priorities List in 1989. The IRP began cleaning up groundwater contamination, primarily related to the southern portion of the JBCC, in 1993. Interim treatment systems were used to begin addressing many of the program's 12 plumes while final decisions on how to address the contamination were ongoing. There are 80 locations on the JBCC that have been evaluated as part of the Air Force cleanup efforts. Many of those locations were confirmed as source areas that contributed to soil and/or groundwater contamination at some point in the past and 77 have been cleaned up.

This accomplishment allowed cleanup of close to 50 billion gallons of groundwater and delisting of 61 source areas while the selection of final remedial actions was completed. This resulted in all IRP remedies being in place before signing of the program's final two decisions in September 2009. Records of Decision are the official documents detailing the selected response actions for the IRP sites.

IRP treatment systems currently treat 12.3 million gallons of groundwater per day on ten plumes and those systems and the groundwater in the area of each plume are regularly monitored to verify that cleanup goals are being achieved. The program continually looks at ways to optimize system operations and cleanup actions, and will be working with state and federal regulators to determine when cleanup efforts are complete and systems can be shut down.

As part of its cleanup efforts, the IRP replaced impacted drinking water supplies located off base and connected over 1,100 homes in the area of groundwater plumes to municipal water. In addition, the IRP conducts extensive reviews to identify and evaluate private wells in the vicinity of the plumes. Any questions regarding this program should be addressed to the IRP contact on page 12.

For additional information on IRP background and activities, please visit <http://states.ng.mil/sites/MA/JBCC/afcec.htm>.

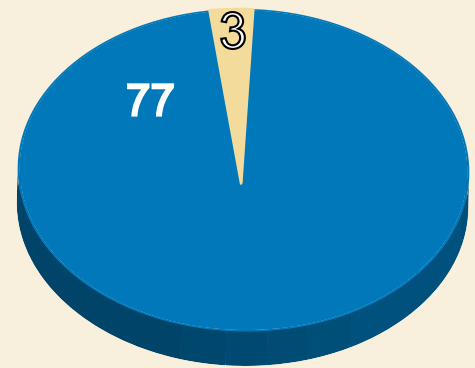
Impact Area Groundwater Study Program

The Army National Guard's Impact Area Groundwater Study Program (IAGWSP) began in 1997 when EPA issued Administrative Orders requiring investigations and cleanup actions. The program began addressing groundwater contamination related to its sites in 2004 and also is removing potential sources of contamination. Interim treatment systems were employed to allow cleanup to begin quickly on the plumes that had the highest levels of contamination or any potential to impact public or private drinking water supplies. These sites are considered to have Treatment in Place until a Decision Document is completed and the final remedial action is implemented. Decision Documents are the equivalents of the IRP's Records of Decision.

The IAGWSP is treating 2.5 million gallons of groundwater per day at five plumes and over 4.5 billion gallons have been treated to date. Two additional treatment systems are expected to start up in 2013. Four sites are in long-term monitoring with monitored natural attenuation and land-use controls as the selected remedies. Three sites required no further action.

Final decisions on how to address the remaining plumes and their source areas are expected in 2013 and 2014 as alternatives for addressing plumes from the J-2 and J-3 Ranges (which have interim treatment systems on their plumes) will be presented to the public. All IAGWSP remedies are expected to be in place in 2014. See pages 8 and 9 for more details on individual sites and opportunities for public input. For additional information on IAGWSP background and activities, please visit the Web site at mmr-iagwsp.org or go to page 12 for contact information.

IRP Source Area Status



■ Cleanup completed

■ Monitoring

The IRP cleanup is regulated under the Comprehensive Environmental Response, Compensation and Liabilities Act of 1980 (CERCLA).

The IAGWSP cleanup is regulated under the Safe Drinking Water Act (SDWA) established to ensure the quality of America's drinking water.

For more information, visit EPA's Web site at www.epa.gov.




A drive-point drill rig is used to collect groundwater samples.


Records of Decision/Decision Documents Signed and Remedies in Place

Plume Name & Status	Treatment /Remedy in Place Date	Projected Remedy Complete Date*	Contaminants of Concern
Ashumet Valley Plume			
Source areas have been cleaned up and groundwater cleanup is ongoing. Mitigation of phosphorus in Ashumet Pond is being conducted.	1999/2009	2019	PCE, TCE, Mn, thallium
CS-4 Plume			
Source area has been cleaned up and a ground-water pump and treat system is in operation.	2005	2016	PCE, TCE, 1,1,2,2-TeCA, EDB
CS-10 Plume			
The plume's multiple source areas have been cleaned up and groundwater treatment is ongoing. Surface water at Ashumet Pond is tested annually and Johns Pond is tested twice yearly. Results show the ponds are safe for recreational purposes.	1999/2009	2055	PCE, TCE
CS-19 Plume			
The plume's source area has been cleaned up. The plume is not expected to move beyond the base boundary and is being addressed through monitored natural attenuation and land-use controls.	2009	2040	RDX
CS-20 Plume			
No continuing source was identified for the CS-20 plume. A treatment system is addressing the plume.	2006	2014	PCE
CS-21 Plume			
No continuing source was identified for the CS-21 plume. A treatment system is addressing the plume.	2006	2024	TCE
CS-23 Plume			
No continuing source was identified for the CS-21 plume. A treatment system is addressing the plume.	2006/2007	2018	TCE, CC1 ₄
FS-1 Plume			
The plume is currently being treated. Source area groundwater continues to be monitored to make sure there are no exceedences of lead.	1999/2000	2020	EDB (plume), Lead, toluene, thallium (source area)
FS-12 Plume			
The source area was removed and the groundwater plume is being treated. Snake Pond is tested annually. Results show the pond is safe for recreational use.	1997-2006	2044	EDB, Benzene

Plume Name & Status	Treatment /Remedy in Place Date	Projected Remedy Complete Date*	Contaminants of Concern
FS-28 Plume			
The source of the plume is unknown. The plume, which has two southern lobes, is being treated. The Coonamessett River in Falmouth remains free of EDB and cranberry farming continues.	1997/2000	2056	EDB
FS-29 Plume			
The source of the plume is unknown. The plume was treated for several years but is currently just being monitored due to significant reductions in contaminant levels in the plume.	2006	2010	EDB, CC1 ₄
LF-1 Plume			
The landfill that was the source of the plume has been capped, and the plume is being treated. Red Brook and Squeteague harbors are tested annually. Results show they are safe for recreational purposes.	1999/2007	2047	PCE, TCE, CC1 ₄ , EDB, 1,1,2,2-TeCa, VC, 1,4-DCB, Mn
Demolition Area 1			
The source area has been excavated and a treatment system is addressing the plume.	2004/2007	2018	RDX, perchlorate
BA-4 Disposal Area			
Soil contamination at the BA-4 Disposal Area was removed. No related groundwater contamination was identified.	2009	2009	Lead (soil)
Western Boundary			
The source of the plume has been depleted. Monitored natural attenuation and land-use controls are being used to address this plume which is predicted to already be below risk-based levels.	2010	2010	Perchlorate
Demolition Area 2			
The source area was removed. The plume, which is not expected to move beyond the MMR boundary, is being addressed through monitored natural attenuation and land-use controls.	2010	2013	RDX
Northwest Corner			
The source area appears to be depleted. The plume is dissipating into the Cape Cod Canal and is being addressed through monitored natural attenuation and land-use controls. All homes in the area are on town water.	2010	2022	RDX, perchlorate

*Monitoring will continue for a specified period after cleanup levels are achieved in order to ensure cleanup goals have been met.

 IRP program-related plumes (Records of Decision)

 IAGWSP program-related plumes (Decision Documents)

Records of Decision/Decision Documents Signed and Remedies in Place

Plume Name & Status	Treatment /Remedy in Place Date	Projected Remedy Complete Date*	Contaminants of Concern
L Range			
The source area was removed during a series of actions in 2008 and 2009. The plume is being addressed through monitored natural attenuation and land-use controls.	2010	2027	RDX, perchlorate
J-1 Range			
Removal of the source area was completed in 2010. Two groundwater plumes are associated with this range. A treatment system began addressing the highest concentrations of the southern plume in 2007 and was expanded as part of the final remedy in 2012. Construction on a treatment system to address the northern plume will be completed by Fall 2013.	2007/2012 (Southern)	2024 (Southern)	RDX (Southern)
	2013 (Northern)	2047 (Northern)	RDX, perchlorate (Northern)
Central Impact Area			
Source area removals began in 2009 and are ongoing. Construction on a treatment system to address the groundwater plumes is expected to be completed by the end of 2013.	2013	2055	RDX, Perchlorate
Gun & Mortar Positions			
The source area was removed. No significant groundwater contamination has been identified. No further action is required at the Gun and Mortar Positions.	2010	2013	RDX
Former K Ranges			
Source area removals have been conducted at the range. No significant groundwater contamination has been identified. No further action is required at the Former K Range.	2012	2012	N/a
Former A Range			
Source area removals have been conducted at the range. No significant groundwater contamination has been identified. The Former A Range is being addressed through limited groundwater monitoring and land-use controls to protect monitoring equipment.	2012	2017	N/a

*Monitoring will continue for a specified period after cleanup levels are achieved in order to ensure cleanup goals have been met.

■ IAGWSP program-related plumes (Decision Documents)

Upcoming Decisions

Plume Name & Status	Next Phase	Projected Remedy Complete Date*	Opportunity for Public Comment
Small Arms Ranges			
Several ranges have been investigated and cleared for use by EPA. Source area removals have been conducted. Additional Investigations to continue through 2013.	Finalize Investigation Report, Decision Document	2014	Fall 2013
J-2 Range			
Source area removals have been conducted. Two interim treatment systems were installed and have treated over 1 billion gallons of water to date.	Finalize RI/FS, Decision Document	2027	Fall 2013
J-3 Range			
Source area removals have been conducted. An interim treatment system was installed and has treated over 500 million gallons of water to date.	Finalize RI/FS, Decision Document	2054	Fall 2014
Training Areas			
Site consists of areas associated with training ranges, maneuver areas and bivouac areas. Review of sites underway. Additional investigations being scoped in 2013.	Finalize Investigation Report, Decision Document	2014	December 2014
Demolition Area 1 Off-Post			
Technical Memorandum with evaluation of groundwater on- and off-base completed. Remedy Selection Plan issued for public comment	Decision Document Addendum	TBD	September 2013

*Actual Remedy Complete date will be determined based on the selected remedial action.

Operations & Maintenance



Water samples poured from passive diffusion bag into a vial for testing. The passive diffusion bags are filled with clean water and inserted into monitoring wells. After about two weeks, the contaminant concentration in the bag will equal the groundwater conditions and the bag can be removed.



The status of AFCEC groundwater cleanup systems in the control room at AFCEC's Operations and Maintenance Facility.



Interior of a modular treatment unit.

Groundwater cleanup remedies require long-term operation and maintenance of treatment plants and their associated systems such as pumps within extraction wells. The cleanups are supported by monitoring data from the plants and groundwater. While groundwater contaminants remain above their cleanup levels, land use controls to prevent exposure are maintained through continual interaction with property owners of affected areas.

Both programs continually review their systems' performance. In order to find ways to accelerate treatment, improve operations, save resources and reduce environmental impacts, the IRP and IAGWSP look at adjusting monitoring plans, changing flow rates, adding extraction wells or turning off extraction wells as the plumes shrink, alternating extraction well operation, or other ways to make their treatment efforts more efficient. In addition, 5-year reviews are conducted to evaluate the implementation and performance of remedies.

Future decisions regarding each of the plumes will include determining when remediation is complete, when to shut off specific extraction wells or entire treatment systems, and when to discontinue monitoring. The final decisions on when to shut down treatment systems will be presented to EPA and MassDEP and will provide opportunity for public input.

Until then, the programs will be looking at ways to expedite cleanup, improve performance, save energy and make the overall operations of treatment systems adhere to the Army's and Air Force's goal of sustainability - protecting resources in a way that preserves them for future use.

JBCC cleanup programs have been leading the way in Sustainable Green Remediation. Sustainability efforts being used by one or both of the MMR cleanup programs include use of:

- biofuels
- low-energy pumps
- energy-efficient lighting heating and cooling
- renewable sources of energy (i.e. wind turbines)
- reusable modular treatment units
- beneficial reuse of treated water
- building new treatment systems in existing facilities

These efforts reduce the use of new materials, the destruction of natural habitat and emissions from vehicles, pumps, and equipment.

AFCEC operates three wind turbines on JBCC. A 1.5 MW Fuhrlaender turbine was constructed in the southwest corner of the Cantonment Area and became operational in December 2009. Two 1.5 MW General Electric turbines were constructed in the northwest corner of the Reserve and became operational in November 2011. Since their startup, they have produced a combined total of 21,968 MWhr through May 2013, resulting in a credit of \$2.9M towards AFCEC's energy bills, with the annual production of renewable energy in 2012 offsetting AFCEC's energy use and related air emissions by approximately 100%.

Learn More

The IRP and IAGWSP strive to keep the local community informed. Documents, reports, meeting minutes, fact sheets and other information are available on the IAGWSP Web site: <http://mmr-iagwsp.org> and the JBCC Web site: <http://states.ng.mil/sites/MA/JBCC/afcec.htm>.

Information Repositories

Information on the IRP and IAGWSP cleanup programs is available on the individual program Web sites listed above and at the Information Repositories located at public libraries in Bourne, Falmouth and Sandwich. The repositories are updated to ensure that current documents are available. A complete repository of documents is available at the Jonathan Bourne Library in Bourne. Recent documents are available at the other two libraries and all documents are available on CLAMS (Cape Libraries Automated Materials System).

MMR Cleanup Team

This citizens' advisory team meets with members of the IRP, the IAGWSP, the EPA and MassDEP to review program activities and to provide input. If you are interested in joining the team, or for more information on the meetings, which are open to the public, please refer to contacts listed on page 12.

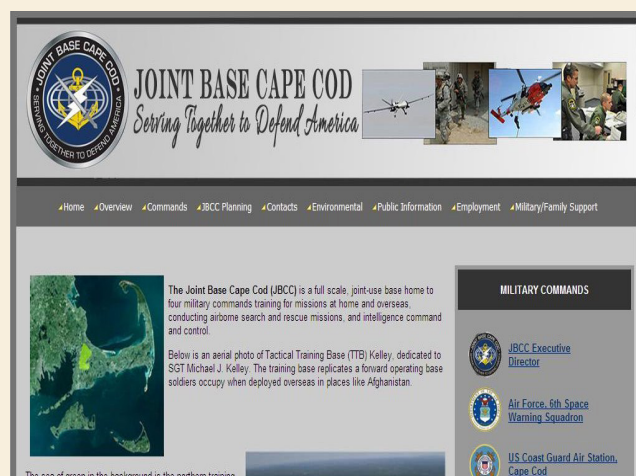
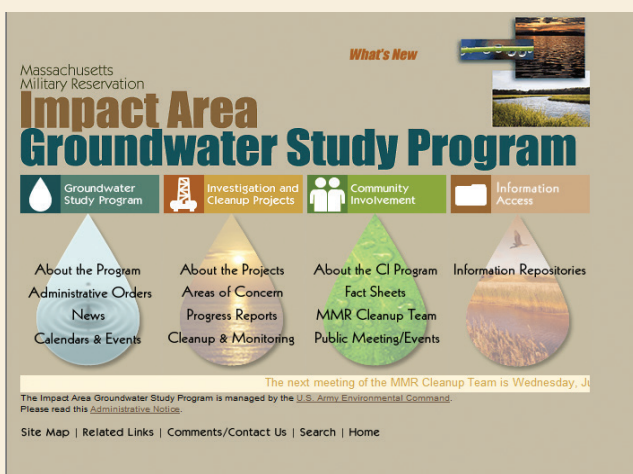
Public Comment Period

Public comment periods on cleanup decisions are held periodically. Visit the web sites for more information.

Administrative Record

The Administrative Record for the IRP is located at: 322 East Inner Road, Otis ANG Base, MA. Access is by appointment only. Please call AFCEC Community Involvement at (508) 968-4678, x2.

The Administrative Record for the IAGWSP is located at: PB 516 West Outer Road, Camp Edwards, MA. Access is by appointment only. Please call the IAGWSP at (508) 968-5630.



More information is available on the JBCC and IAGWSP Web sites.
<http://mmr-iagwsp.org> and
<http://states.ng.mil/sites/MA/JBCC/index.htm>

Contact Information

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For information on Camp Edwards training and small
-arms-range activities, please contact:

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Website: [http://states.ng.mil/sites/ma/resources/erc/
index.htm](http://states.ng.mil/sites/ma/resources/erc/index.htm)

Acknowledgments

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Photos on the cover: (Clockwise from Left: Two of AFCEC's three 1.5-megawatt wind turbines, a modular treatment unit is moved for reuse at another plume site and a robotically operated vehicle used by IAGWSP to separate unexploded ordnance items.

Impact Area Groundwater Study Program
PB 516 West Outer Road
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