



On the Penobscot

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Orrington Remediation passes the halfway mark

Three years into the final phase of environmental remediation of the former HoltraChem site in Orrington, the project remains on schedule for a 2019 completion that will include full site restoration.

Remediation projects take time to complete due to the environmental regulations that govern those activities. As noted in previous newsletters, the initial part of the process was focused on pre-design data collection to define the boundaries of impacted soil areas and other criteria that were needed to develop the detailed remedial design plans. Once the Maine Department of Environmental Protection (DEP) approved designs for a specific area, remedial construction activities could then begin in those areas. Now we are focused on the remaining areas which need to be addressed.

The former chlor-alkali plant once produced chemicals for use in the pulp and paper industry in Maine and was owned by various corporations over time. The plant shut down in 2000 and the then current owner HoltraChem later filed for bankruptcy. Mallinckrodt US LLC (Mallinckrodt) has assumed responsibility for the remediation and has been actively engaged in that process ever since.

Between 2000 and 2008, Mallinckrodt worked methodically to prepare the site for its final environmental remediation and restoration by dismantling the buildings and other structures on the site and improving the existing groundwater treatment plant.



New caps on landfills 3, 4 & 5 were completed in 2016 and the vegetation has grown nicely.

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Half Way Mark, continued

Since active remediation began in late 2014, site engineers – in constant consultation with the engineering team from the Maine Department of Environmental Protection (DEP) - have excavated key areas of the site where impacted soils were present from past manufacturing operations.

- The design of the Landfill Ridge Area was submitted, reviewed and approved by DEP, impacted soils were excavated and the area has been restored with a newly vegetated slope and storm water controls in place.
- The remedial design for impacted soils in the Scrap Metal Yard, an area where manufacturing debris and equipment was previously stored, was also reviewed and approved by DEP and excavation and restoration in this area has since been completed.
- Corrective measures at the Southerly Stream and the Northern Drainage Ditch have also been completed and restoration in both of these areas is currently underway.
- Of the five landfills on site, Landfills 3, 4 and 5 have been recapped and graded and covered with new vegetation.
- Excavation of Landfill 2, which is located on the northern portion of the manufacturing site, has been completed and restoration should be finished before year's end.
- Work in the Southern Cove, an area of the Penobscot River adjacent to the site, also got underway this summer. The contractor assembled a special barge system to handle excavation of sediment just below the site.

Excavation and removal at the last of the five landfills – Landfill 1 – will begin later this year with remediation of the Plant Area to follow in 2018.



One of the long-term benefits of the remediation effort underway at the former HoltraChem site is the rail spur that Mallinckrodt US LLC has repaired and upgraded after it was abandoned in 2000 when the plant closed. The rail line has been a critical part of the overall environmental remediation as it has been the primary source of transport for excavated soils and other materials that are loaded into enclosed rail cars for shipment to secure disposal facilities. This photo shows regrading in preparation for rebuilding the rail spur near the recently excavated Landfill 2. One freight train replaces hundreds of trucks, reduces traffic and road wear, and is environmentally friendly.

The language that engineers speak

Every profession has its own unique language with technical terms that only they alone seem to understand. Engineers are no different and often speak in an alphabet soup of letters and symbols in a language often punctuated by acronyms that make non-engineers wonder what language is being spoken.

This is something that one environmental engineer might say to another environmental engineer:

"The COCs in the CMI were approved by the DEP. The MPS looks reasonable and we are expecting to excavate maybe 1,000 CYs. Right now we're pumping about 50,000 gpd through the GWTP. The PAMS has not detected any VOCs. Pick me up a BLT if you are heading off site."

Translation:



COC means Contaminant of Concern and is found in the soil or groundwater. The CMI is the actual implementation of the engineering design plan that has been approved by the Maine Department of Environmental Protection. The MPS stands for Media Protection Standards which is the environmental standard that must be met in order for the area of concern to be considered safe. CYs are cubic yards and refer to soil that is excavated and hauled off site for safe disposal. The 50,000 gpd refers to gallons per day of water that are processed through the Ground Water Treatment Plant (GWTP). VOCs are Volatile Organic Compounds that are monitored by the Permanent Air Monitoring Stations (PAMS) .

A BLT is, of course, a Bacon, Lettuce and Tomato sandwich. Yes, even engineers eat lunch!

Here is a sample of some frequently used acronyms (you can find more on our website at beyondholtrachem.com)

CMI - Corrective Measures Implementation – the actual construction of the approved engineering design to remediate a specific area.

COC - Contaminant of Concern - A chemical present in the soil or groundwater above the Media Protection Standards established by the Maine DEP and USEPA.

CQA - Construction Quality Assurance – the plan describing the quality protocols that define the procedures to be completed by engineers to verify the design is implemented correctly.

GWTP - Groundwater Treatment Plant – the onsite facility which treats both groundwater and surface water which may be generated at the site.

HASP - Health and Safety Plan – A site-wide health & safety plan which all contractors are required to follow. Specific HASPs are also developed for remedial work areas.

Investigation - Initial field work to collect samples of soil, sediment, surface water, and groundwater to evaluate the presence of hazards at the site.

MPS - Media Protection Standards – the site-specific cleanup standards established by the Maine DEP for remediation endpoints.

O&M - Operation and Maintenance – activities that take place after the remedial construction work, such as groundwater extraction and treatment and ongoing groundwater monitoring, to ensure the cleanup continues to be effective.

QAPP - Quality Assurance Project Plan – the document approved by the Maine DEP that outlines the methods and procedures to be followed by the on-site laboratory, during sample collection, and other remedial activities.

VOC - Volatile Organic Compounds - the on-site air monitoring stations monitor VOCs in compliance with the DEP-approved Perimeter Air Monitoring Plan.

What, Where, When, & How – Next Up: Landfill 1



As site workers wind up the excavation of Landfill 2, and the vegetation on the new caps on Landfills 3, 4 and 5 is growing nicely, remediation of the last of the five site landfills –Landfill 1 – is rapidly approaching. Landfill 1 is an area located west of the plant manufacturing area (which is scheduled for remediation in 2018). Parts of the area were used for a short period of time, from approximately 1970 to 1972, for manufacturing wastes from a variety of operational activities. There were two discrete disposal areas used as well as a surface impoundment for wastewater. This area was closed and capped with a plastic (Hypalon) material in approximately 1980 to protect the buried material from storm water and ground water. The remedy for Landfill 1 will be described in the final Corrective Measures Implementation (CMI) Plan (design document) which will be submitted for approval by the Maine Department of Environmental Protection (DEP).

The Draft CMI Plan was submitted to the DEP on April 25, 2017, which made initial comments in May. Technical discussions have been ongoing throughout the summer. Once agreement is reached on the remaining design issues, Mallinckrodt US LLC (Mallinckrodt) and its engineering team will finalize the CMI Plan and submit for DEP approval so that remediation of Landfill 1 can begin this year as scheduled.

The excavation of landfill 1 will be similar to the approach used in the excavation of landfill 2, seen here as clean soil was being placed on the site after excavation was completed.

During excavation of the landfill, as with other areas remediated at the site, confirmation samples will be collected to ensure that the excavations have met the design criteria. Once the landfill has been excavated and soils transported off site for disposal, the area will undergo grading and restoration work similar to that implemented at the Landfill Ridge, including:

- Backfilling the excavated area with clean soil
- Re-grading the area to reflect the naturally occurring slope and to assure that the new slope will shed storm water away from the former landfill.
- Final grading with topsoil and new vegetation to blend in with the surrounding land

Mallinckrodt has selected the New England-based environmental firm Charter Environmental to conduct the Landfill 1 remediation. Charter, which has been working on the site for more than a year, was recently selected as one of the Top 30 environmental remediation firms in the country by Engineering News Record (ENR) magazine. They have substantial experience in Maine and have already completed remediation of the Scrap Metal Yard, the Northern Drainage Ditch and the Landfill 2 areas at the Site. Their experience with high-profile Maine projects, such as the Callahan Mine Superfund Site Remedial Action in Brooksville, and the Casco Bay Pipeline Remediation in Brunswick, was an important factor in their selection for the Orrington project.



Who What Where When & How – Southern Cove



Work on remediation of the Southern Cove, located below the site, got under way this summer after permits were issued by the U.S. Army Corps of Engineers and the Maine Bureau of Submerged Lands. Sevenson Environmental Services assembled a barge and excavator setup to remove sediments from the cove.



Predesign and sampling in the cove provided data for the final design plan.

The remediation of the Southern Cove is underway. During 2016 the pre-design work, which included further sampling to delineate the contaminated sediments and other investigations to support the safe removal of sediments, was completed.

Corrective measures for the Cove involve the removal of impacted sediments with mercury concentrations exceeding the Media Protection Standard, a term used to define the clean-up criteria established for the Orrington Site. Sediment will be removed, clean sediment will be restored and certain wetlands will be re-vegetated.

Remediation of this area has many challenges. There is a very short time frame in which work in the water is allowed in order to protect fish and the environment. No work can be conducted during spring and early summer but must be completed before ice forms on the river so the work can be performed safely. Tidal cycles, fast current velocities, and coarse sediment all present additional challenges. Throughout the remediation in the Cove, water quality and fish monitoring will take place to ensure overall environmental impacts are minimized, fish access is limited within the construction areas and turbidity (water clarity) and sediment transport is minimal.



What happens in just one month on the Orrington Remediation Site?

If you casually drive past the site of the former HoltraChem site along the River Road, it might appear that little is happening beyond what you can see from the road. But the site itself is a whirlwind of activity. This is what a typical month looks like:

- Daily safety meetings
- Weekly technical discussions with the Maine DEP (at a minimum)
- Weekly construction meetings with construction managers, design engineers, contractors and DEP representatives.
- Continual operation of the perimeter air monitoring system and meteorological station
- Operation of the on-site lab in compliance with Maine certification.
- Ongoing stockpile management of excavated materials and loading of railcars for off-site secure disposal.
- Monitoring of groundwater throughout the site
- Weekly and monthly monitoring of surface water near remediation areas.
- Continual maintenance of erosion and sediment control measures around remediated and restored areas as well as active construction areas
- Ongoing inspections of the new caps on Landfills 3, 4 and 5
- Submittal of technical documents to the Maine DEP Collecting confirmation samples from excavations once impacted soils or sediments are removed (such sampling will continue in the Southern Cove throughout the Fall)
- Grading backfilled areas after completing excavation of impacted soils and starting restoration activities (for example excavation of Landfill 2 was completed in August and followed by final grading, topsoil placement and seeding).
- Pumping and treating extracted groundwater and surface water from construction areas through Groundwater Treatment Plant (so far in 2017, an average of approximately 58,000 gallons of water per day have been treated in the plant each month).



And with every passing month, the former chemical manufacturing plant gets nearer to its final remediation and restoration, and closer to a new future.



The months seem to fly by at the Orrington remediation site, but the progress of the work is keeping pace with the calendar. In the photo above, taken in late March, workers contain an area of excavation around Landfill 2. By Fall, the excavation was completed and the area back filled with clean soil ready for re-vegetation.

New website and quarterly newsletter keep Orrington informed on Remediation activities

Nine years ago Mallinckrodt US LLC (Mallinckrodt) initiated a regular newsletter that is mailed to every household in Orrington to keep residents informed about the cleanup progress at the site.

The *On the Penobscot* newsletter has been published ever since and is now joined by an updated website that offers even more timely and more detailed information about the ongoing site work. The website provides updates and a cache of technical reports for those who want to continue following the progress. It can be found at www.beyondholtrachem.com

The 240-acre site is important to the town, both for its past as one of the largest employers before it was closed in 2000, and in its future for its prospects of redevelopment after remediation is completed in 2019. While we are all looking forward to the finish line, Mallinckrodt has always believed that it has an obligation to the community to keep residents fully informed about the details of the remediation and how that work is going.

The newsletter and website have included many features along the way, including articles on the opening of the new groundwater treatment plant, profiles of the engineering firms selected by Mallinckrodt to complete the remediation, profiles of the Maine DEP team working alongside those firms, and even a profile of Town Manager Paul White, who has worked with Mallinckrodt and the Maine DEP throughout his tenure as the Town Manager.

Beyond HoltraChem: Looking Forward to the Future

Over the past decade, Mallinckrodt US LLC has made a diligent effort to communicate directly with the citizens of Orrington, largely through our newsletter that we call *On the Penobscot* to reflect the important work being done on the site of the former HoltraChem plant. While Mallinckrodt never operated the chemical manufacturing site, it assumed responsibility for its remediation as the successor company of a previous operator.

In our newsletter and on our website (beyondholtrachem.com) you will find a timeline that tracks the history of the site beginning in 1994. The plant was first operational in 1967 and produced chlorine and other chemicals for use in the pulp and paper industry in Maine.



The screenshot shows the homepage of the website www.beyondholtrachem.com. The header features the "Beyond HoltraChem" logo with a stylized sun icon. The main navigation menu includes links for Home, Progress & News, Project Clean Up, Reports & Studies, Timeline, Community Connection, and Contact Us. A search bar is located in the top right corner. The main content area has a banner with the text "Looking FORWARD to the future" and an aerial photograph of the industrial facility situated near a body of water. Below the banner, there are two green boxes: one on the left containing the text "Moving Beyond HoltraChem" and another on the right containing a link to "On The Penobscot Newsletter". The footer contains small text about the website's purpose and links to various social media platforms.

In addition to our quarterly newsletter, Mallinckrodt US LLC is providing more timely information on our website www.beyondholtrachem.com which includes detailed monthly reports, a link to our newsletter and other information about our work in Orrington.



It was Old Home Week in Orrington in July with ceremonies and pure fun on display. Clockwise: If you were around for the 150th anniversary of the town's founding, you might be at the top of the list as next year's Citizen of the Year; State representative and local resident Dick Campbell honored Alan Baker as the 2017 Citizen of the Year; a rubber duck is seen here thinking about participating in the SedgeunkeDUCK Stream Regatta to raise funds for the Grange Hall acquisition; and there was plenty of good food to be had all week long. Next year the town celebrates its 230th birthday.



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