



## About Naturally Occurring Asbestos (NOA)

The Massachusetts Water Resources Authority (MWRA) is conducting field work to support a major water supply Tunnel Program in the Metropolitan Boston area. The two new water tunnels will improve the reliability of our water infrastructure and allow our aging, existing water tunnel system to be rehabilitated without interrupting service.

Similar to our existing water tunnels, the two new tunnels will be deep underground in bedrock and fully lined with concrete or steel. As part of the design phase for the Tunnel Program, deep test borings about 4 inches in diameter are being drilled to depths of about 400 to 500 feet below ground surface to collect rock core samples. Our engineers and geologist study the different rock types in the core samples along the proposed tunnel alignments and develop an understanding of the various rock properties, which are important for the design and construction of the new water tunnels. In the course of implementing the test boring program, Naturally Occurring Asbestos (NOA) minerals were observed in several thin veins within a specific rock type from a few rock core samples over a portion of the proposed tunnel alignment.

### *What is NOA?*

Naturally Occurring Asbestos (NOA) refers to a family of very thin fibrous minerals that are formed in certain rock types as a result of natural geologic processes and have been identified by the EPA as asbestos.

### *Is NOA different than asbestos in building material?*

Yes, NOA is distinctly different than asbestos used in manufactured building materials, in that it has not been extracted from the rock where it formed, then processed, milled and concentrated like asbestos in building material. In other words, asbestos used in building materials is highly concentrated whereas NOA is not. Like all asbestos, NOA does not dissolve in water and does not evaporate.

### *Where has NOA been observed?*

During the course of the test boring work, some rock cores from specific rock types were found to contain thin veins of fibrous minerals that are classified by US EPA as asbestos. The minerals in these few thin veins are NOA. The NOA does not appear to be spread throughout the bedrock but rather limited to thin veins where NOA material formed in small fractures of the rock as a result of natural geologic processes. Where these thin veins of NOA were observed, they occurred sporadically within the rock at depths ranging from about 90 feet to 420 feet below ground surface. These thin veins of NOA are estimated to comprise less than a fraction of a percent of the total rock volume throughout the full depth of the test borings where it was found. The rock type where the NOA was observed has not been found in all test borings drilled for the Tunnel Program. Rather, it appears to be limited to certain zones within two bedrock formations.

### *What does NOA look like?*

To the naked eye the NOA observed in the thin veins in the core samples looks like very tight bundles of very fine hair. See photographs for examples. Individual fibers of NOA can only be seen under a microscope.



### *Is NOA harmful?*

If NOA is not disturbed and the individual fibers are not released into the air, then NOA is not a health risk. However, NOA can be released into the air from its bound form if rock containing NOA is brought to the surface and broken, crushed, or frayed. NOA, similar to asbestos in building material, is considered a health hazard if it becomes airborne and is inhaled. The presence of asbestos fibers in water is not considered particularly harmful as EPA drinking water standards asbestos limit is about 26 million fibers per gallon.

### *How is work around NOA done safely?*

NOA is very common in some states but is very rare and uncommon in Massachusetts. In states where NOA is common, various regulations and guidelines have been developed for working safely around NOA. The most robust NOA regulations were developed in California and these regulations focus on dust control and keeping NOA material wet so it does not become airborne. Most other states that have NOA regulations model them after California's approach. All the exploratory deep rock coring for the Program are being done using wet rotary drilling methods using potable water as the drilling fluid. Accordingly, no dust is generated during coring operations. The drill cuttings are suspended in drilling fluid, essentially forming a highly viscous fluid, which is brought to the ground surface and allowed to settle in a metal tub. Based on testing results, NOA was confirmed to be present in a small amount of some of the cuttings and drill water.

### *What is MWRA doing about NOA?*

Since the discovery of NOA in rock core samples, MWRA has been coordinating with MassDEP and the communities where the material was found regarding NOA safety procedures. Since Massachusetts has no regulations specific to the management of NOA, the NOA identified in cuttings and drill water from our geologic investigations will be managed under the Massachusetts asbestos regulations that address asbestos in building materials, with certain modifications appropriate for NOA. In addition, MWRA will follow applicable OSHA standards and regulations to protect workers from the potential hazards of NOA.

What that means is that all drill cuttings and drill water that could possibly contain NOA will be containerized during the work and will be fully removed from the site by a licensed contractor at the end of the work. All staff involved with the management of NOA have attended enhanced safety training related to work around possible asbestos material. Staff will utilize NOA specific personal protective equipment (PPE) where appropriate. Air monitoring will be conducted at sites where NOA containing rock is suspected (or confirmed), for protection of site workers and the general public.

The information gathered as part of the ongoing field work will allow our engineers to ensure the future tunnel system, which will be concrete or steel lined, is not impacted by any environmental conditions including NOA.

### *What should I do about NOA?*

As with all work sites, the best thing you can do is keep out of the designated work areas. All rock drilling is being done "in-the-wet", therefore no dust will be generated and any excess drill cuttings and drill water will be removed appropriately. These procedures mitigate risks not only to onsite workers but to those surrounding the work sites. Our staff and contractors have the experience and training to work safely in and around these types of work sites.

### *Where can I find more information about NOA?*

More information about NOA is available at the links below:

[Information from EPA on Naturally Occurring Asbestos: Approaches for Reducing Exposure](#)

[For OSHA regulations regarding NOA in the workplace](#)

[Regulations regarding asbestos waste management in Massachusetts](#)

[Information from the California Air Resource Board on NOA](#)



For more information about the Metropolitan Water Tunnel Program please visit [www.mwra.com/mwtp.html](http://www.mwra.com/mwtp.html) or contact our Communications Team at [tunnels.info@mwra.com](mailto:tunnels.info@mwra.com).

