

MEMO

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From:

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Date:

May 10, 2019

Arcadis Project No.:

MI001454.0003

Subject:

Livonia Transmission Plant
Memo Regarding Email received on 5/2/2019 – 34450 Beacon Avenue and
other residences
36200 Plymouth Road, Livonia, Wayne County, Michigan
EGLE Site ID No. 82002970

On behalf of Ford Motor Company (Ford), this memo has been prepared by Arcadis of Michigan, LLC for the Livonia Transmission Plant (LTP) site (the site). In response to the May 1, 2019 email from the Michigan Department of Environmental, Great Lakes, and Energy (EGLE), requesting more information regarding the current flooding event associated with the Alden Village Subdivision. Below is a description of the efforts made to date and activities that will be completed when flooding conditions are no longer present:

On April 26, 2019, Arcadis received an email from the current property owner located at 34450 Beacon that indicated that standing water was identified within the crawl space. Arcadis immediately brought an air purifier to the homeowner and began assessing the crawl space. Arcadis confirmed that water related to flooding conditions was present on the liner. Arcadis immediately started pumping water from the crawl space, but after 50 gallons of water had been removed, there was no evidence that the water was receding. It appeared that water was infiltrating through the green drains that are placed in the liner. Green drains are used to allow water to drain in the event there is a potable water leak, but do not allow

vapor to enter. The three green drains were capped with a 3-inch expansion cap. Arcadis returned on April 27, 2019 to assess the crawl space. Approximately 170 gallons of water was removed, which resulted in no significant decrease in the water level. Arcadis visually confirmed that some of the liner seams had become compromised, which was allowing water to pass through. It is believed some of the seams are failing due to the hydrostatic pressure from the flooding conditions. Arcadis sealed the liner seams per industry standards for the installation of a submembrane depressurization system.

During the week of April 22, 2019, the Livonia area received approximately 1.22 inches of rain, which likely saturated the ground. During the week of April 29, 2019, the Livonia area received an additional 3.9 inches of rain, with 3.28 inches in a 24-hr period on April 30th and May 1st, which resulted in area wide flooding and road closures (AccuWeather, 2019). Governor Whitmer declared a state of emergency in nearby Wayne County, where 3,000 homes were flooded and the Southfield Freeway was closed (Associated Press, 2019).

Arcadis continues to assess this property for water infiltration due to elevated groundwater and flooding conditions in the Alden Village subdivision. Arcadis has continued to visit the property located at 34450 Beacon to evaluate water levels in the crawl space and to discuss with the property owner when Arcadis will be able to actively dewater. The following table summarizes the visitations.

Date	Activities
April 26, 2019	Arcadis immediately responded to email regarding flooding under the crawl space. Air purifier provided to property owner. Arcadis completed visual inspection of crawl space and liner. 50 gallons of water removed and placed in a 55-gallon drum for disposal. Pumping did not affect water level. The three green drains were capped with a 3-inch expansion cap.
April 27, 2019	Arcadis completed visual inspection of crawl space and liner. 170 gallons of water removed and placed in a 250-gallon tote. Pumping did not affect water level. Compromised seal observed in liner. Appears hydrostatic pressure of water split the liner at a seam. Liner to be assessed once water level subsides.
April 29, 2019	Verified that water was still present within crawl space. No increase of water observed.
April 30, 2019	Attempted to remove water via a shop vacuum. Water level did not subside.
May 3, 2019	Completed a visual inspection of flooding conditions at the property. Discussed with property owner that the water will be removed as soon as the water level subsides.
May 6, 2019	Completed a visual inspection of the flooding conditions at the property. Discussed with property owner that the water will be removed as soon as the water on the property went down. Property owner indicated that when he was younger, that he used to pump the water from under the crawl space to the ditch when the flooding accumulated in the crawl space.
May 7, 2019	Completed visual inspection of flooding conditions at the property.
May 8, 2019	Completed visual inspection of flooding conditions at the property. Property is still flooded.

Until the water level subsides and is removed from the crawl space, the liner cannot be assessed for potential damage and/or be repaired. The property owner currently has an air purifier in the home and is in use. The interim preemptive mitigation system is currently running but continues to have signs of water present in the geo-venting. Once the water does subside, Arcadis will immediately assess and repair any damage to the interim preemptive mitigation system and evaluate performance metrics. Photo

MEMO

documentation of the conditions of the crawl space during the last two weeks is provided in the photo documentation section in this memo.

In addition to the response at 34450 Beacon, Arcadis also conducted residential site visits in the neighborhood to determine if water was potentially leaking within basements or crawl spaces due to the flooding within the Alden Village Subdivision. The site visits are summarized below:

Date	Property Address	Observations
May 1 and 2, 2019	12070 Boston Post	Water was observed infiltrating around the perimeter of the basement. Water was observed to be draining through the green drain that was placed in the floor drain. Sump pump was on and working. Crawl space was dry. Air purifier in operation. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	34682 Beacon	Water was observed on the crawl space liner. Estimated volume was 3 to 4 gallons. Water could be felt under the liner. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	12066 Boston Post	Water was observed on the liner near the location where a green drain was present. Green drain was submerged. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	34920 Beacon	No water present. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	34940 Beacon	Basement with sump. No water present. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	34990 Beacon	No water present. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	34950 Beacon	No water present. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	34380 Beacon	Localized water observed on the liner and appeared to be coming through a seam on the northern portion of the crawl space. Southern half of the crawl space appears dry. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	34424 Beacon	No water present. Homeowner indicated that sump has been operating continuously. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	12088 Brewster	Water on liner near suction point located in the northern portion of the crawl space. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	12075 Brewster	Homeowner not home, could not assess. Interim preemptive mitigation system is in operation. No alarms received indicating the system was offline.
May 1 and 2, 2019	12091 Brewster	No water present. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	34401 Capital	Water present on the liner. Interim preemptive mitigation system in operation. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	12017 Brewster	No water present. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	34959 Beacon	Water is present on the liner and accumulated in the low spots of the crawl space. Interim preemptive mitigation system is in operation.

Date	Property Address	Observations
May 1 and 2, 2019	12100 Beacon	No water present. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	12131 Boston Post	Water infiltrating through the basement floor and walls near the base of the basement. Interim preemptive mitigation system in operation. Air purifier is present and on.
May 1 and 2, 2019	12141 Boston Post	No water present. Interim preemptive mitigation system is in operation.
May 1 and 2, 2019	12089 Boston Post	Property owner contacted Arcadis on May 1, 2019, indicating that there appears to be water in the suction lines of the mitigation system. Property owner turned off the interim preemptive mitigation system until Arcadis could assess. Arcadis offered an air purifier to the property owner on May 1, 2019, but the property owner declined. Arcadis received notice on May 2, 2019 that the interim preemptive mitigation system was turned on.
May 3, 2019	34401 Capital (2 nd Visit)	Completed a visual inspection to determine if water was still present in crawl space or if water on top of the liner had increased. No evidence was observed an increase in volume.
May 6, 2019	34682 Beacon (2 nd Visit)	Completed a visual inspection to determine if water was still present in crawl space or if water on top of the liner had increased. Based on the visual inspection, it appeared that water on the liner had increased from the Initial May 1 and 2, 2019 inspection.
May 6, 2019	12088 Brewster (2 nd Visit)	Completed a visual inspection to determine if water was still present in crawl space or if water on top of the liner had increased. No evidence was observed an increase in volume.
May 7, 2019	34380 Beacon (2 nd Visit)	Crawl space inspected and minimal water present on the liner. Interim preemptive mitigation system is in operation.

Arcadis continued to monitor the weather and assess the flooding conditions in the neighborhood for signs of water levels to subside, in order to implement dewatering of the crawl spaces. Inspections of the neighborhood the week of May 6, 2019 indicated that water levels had begun to decline.

On May 9, 2019, dewatering efforts were implemented at the following locations. Arcadis continues to coordinate with the property owners to dewater and complete the liner inspections.

Property Address	Dewatering Activities
34401 Capital	Pumped approximately 25 gallons of water from the crawl space. 4 seams in the liner were compromised. Three seams were able to be repaired, but the fourth seam could not because water remained under the liner. Green drains were plugged. Property owner was offered an air purifier, until the fourth seam could be repaired. The air purifier was accepted and is currently in operation. Interim preemptive mitigation system was in operation. Arcadis also observed two potable water lines that are leaking and will need repair.
34591 Beacon	Pumped approximately 40 gallons of water from the crawl space. Liner appears to be intact and no compromised seams.

Property Address	Dewatering Activities
12066 Boston Post	Pumped approximately 20 gallons of water from the crawl space. Liner appears to be intact and no compromised seams.
34682 Beacon	Inspected crawl space to determine if water was present. Water was identified in the crawl space similar to the observations detail on May 1 and 2, 2019. No additional water was identified. Currently working with property owner to schedule dewatering.
12088 Brewster	Currently scheduled to assess the liner and perform dewatering, if necessary, on May 10, 2019.

Arcadis understands the urgency to respond immediately to dewater crawl spaces and to assess and repair the crawl space liners. As described above, Arcadis has responded in an urgent manner and will continue to take corrective measures to respond to the flooding in the Alden Village Subdivision. Arcadis will continue to provide weekly updates to EGLE the status of each property documented in this memo that has or had evidence that water was present within the crawl space. Arcadis cannot provide a specific date when all crawl spaces have been dewatered and the liner repaired, if necessary. The dewatering and repair is subject to water levels declining and access to the crawl spaces from the property owners.

Finally, Arcadis and Ford are reviewing administrative and technical measures that can be defined now so that we can proactively address future flooding events in the neighborhood.

References

AccuWeather, 2019. <https://www.accuweather.com/en/us/livonia-mi/48150/may-weather/338728?monyr=5/1/2019&view=table>

Associated press, 2019. <https://www.usnews.com/news/best-states/michigan/articles/2019-05-02/southeastern-michigan-braces-for-more-rain-after-flooding>.

Photo 1 – Standing water on the liner in the crawl space at 34450 Beacon



Photo 2 - Standing water on the liner in the crawl space at 34450 Beacon



Photo 3 - Flooding Conditions Near 34450 Beacon



Photo 4 - Flooding Conditions Near 34450 Beacon



Photo 5 – Flooding Conditions Near 34450 Capital

