

August 31, 2011

Mr. Scott Alfonse, Director  
City of New Bedford  
Department of Environmental Stewardship  
133 William Street  
New Bedford, Massachusetts 02740

**Subject: Summer 2011 Cap Inspection  
Keith Middle School  
New Bedford, Massachusetts**

Dear Mr. Alfonse:

At the request of the City of New Bedford (City), TRC performed the tenth inspection of the protective cap installed at the Keith Middle School Site located at 225 Hathaway Boulevard in New Bedford, Massachusetts. A TRC engineer conducted the inspection on August 25, 2011 in accordance with the Long-term Monitoring and Maintenance Implementation Plan (LTMMIP) dated October 20, 2006 prepared by the BETA Group, Incorporated (BETA). The LTMMIP requires three inspections per year in April, August, and November to confirm that the cap is being properly maintained to prevent exposure to the impacted fill beneath.

The inspection consisted of a walking traverse of the entire Site with visual observations of the cap including the first floor concrete slab of the building, the courtyard within the building footprint, and the concrete, asphalt and landscaped surfaces outside the building. Access to most locked rooms within the building was provided by the facility engineer, Gary Gomes and/or a school custodian. The inspection was documented in a log book. Copies of the log book pages are presented as Attachment 1. The findings of the inspection are documented on a site-specific Cap Inspection Form (Attachment 2) provided in the LMMIP. Photographs taken during the inspection are presented as Attachment 3.

Based on TRC's inspection, the concrete floor within the footprint of the building is currently acting to prevent exposure to the impacted fill beneath. Four minor cracks were noted in the boiler room floor. Approximately one foot of standing water was observed in a sub-slab vault adjacent to the western science classroom. The source of the water in the vault is not known at this time but the volume of water appears to have increased since the April 2011 inspection. The vault space is traversed by drain lines from the science rooms. Alternatively, the water could indicate groundwater seepage, although observations of topography in the vicinity of the building and the water level in the wetland to the west of the school suggest that the groundwater elevation would be lower than the floor of the vault. Note that site compounds of concern are listed as non- or minimally-volatile, and

the Liquid Boot seal was installed as a precaution to prevent the intrusion of any vapors into the KMS building. The courtyard area within the building was acceptable.

A concrete walkway leading to the community room at the northeast corner of the building exhibited a crack of approximately ½ to 1 inch in width. Cracks greater than ¼-inch are unacceptable in accordance with the LMMIP. This area should be scheduled for maintenance or repair per the LTMMIP. Cracks in the asphalt entrances to the school parking lots have become wide enough for grass to grow through and should also be addressed.

In several areas around the exterior of the school building, a bead of caulking exists in the joint between the foot of the brick building walls and the concrete walkways. The caulking prevents weather elements (i.e., rain, snow, and ice) from entering the joint space. The caulking appeared deteriorated in several areas, and was observed separating from the wall and walkway surfaces. Although conditions were not indicative of a potential for soil exposures, TRC recommends repair/replacement of the caulking. Continued infiltration of weather elements into the joint could eventually separate and deteriorate the walkway.

The landscaped areas outside the building were acceptable with the exception of the following:

- Several small holes exist along the northern edge of the cap, which appear to have been burrowed by small animals.
- Sloughing riprap is undermining the concrete fence support at the top of the slope, and filling the outlet of the storm water drainage culvert on the west side of the Site. Very minor areas of soil erosion were observed in along the upper slope. The area appears stable at this time, but the condition is likely due to an increase in steepness beyond the cap design slope.
- Erosion of landscaped areas was observed adjacent to the concrete walkway entering the school building at the northern entrance from Hathaway Boulevard. The erosion has resulted in a loss of approximately 4 to 5 inches of soil. If this remains unrepaired, it could also compromise the integrity of the concrete walkway.
- Vegetation is sparse along the southern edge of the cap. Topsoil and perennial vegetation may prevent future erosion in this area.
- Knotweed appears to have taken root in a significant area on the southwestern edge of the cap.

At this time the black separation fabric that demarcates the underlying contaminated fill from the clean imported fill is not visible. However, these areas should be repaired in order to prevent further erosion or cap damage that could eventually expose the separation

fabric. Also, we are available to discuss potential follow-up regarding the observation of water in the vault.

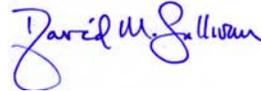
Please refer to the attached Cap Inspection Form and photographs for additional details concerning the conditions described above.

If you have any questions, please contact me at 978-656-3565.

Sincerely,

Handwritten signature of David M. Pettit in black ink.

David M. Pettit  
Project Engineer

Handwritten signature of David M. Sullivan in blue ink.

David M. Sullivan, LSP, CHMM  
Senior Project Manager

Attachments

# **Attachment 1**

## **Log Book**

f. 4/13/11 KMS Cap Inspection DMP  
is really steep where the concrete wall  
is undermined. check design slope require-  
ments.

8:30 DMP returns key and is off site.

DMP 4/13/11

8/25/2011 KMS Cap Inspection DMP

0715 - DMP onsite to meet Cheryl Herlin  
Get key to all rooms from custodial  
staff. tour bldg with Cheryl

0730 - Note separation in sand closet. (wall)  
structural issue? note cap issue.

0755 - Note 1' of water in western  
Science room vaults. SW corner water  
appears to wick ~1' above water line.  
rest of vault, the water wicks ~2".

→ can't access 074 & 167 & Elevator vault  
at south of school & center of school

0900 Note 4 cracks in boiler room  
running east-west. appear to be  
tight.

0910 Animal burrow in North Slope ~~next~~  
next to Corner Sports.

0915 Note separating seams in driveway  
Grass coming up.  
also note erosion next to walkways  
at Northern Entrance on Hawthorn &  
still there.

0935 Burrow noted at Northwest corner.  
Burrow noted at North

2 Big Burrows at very North

———— DMP 8/25/11 ————

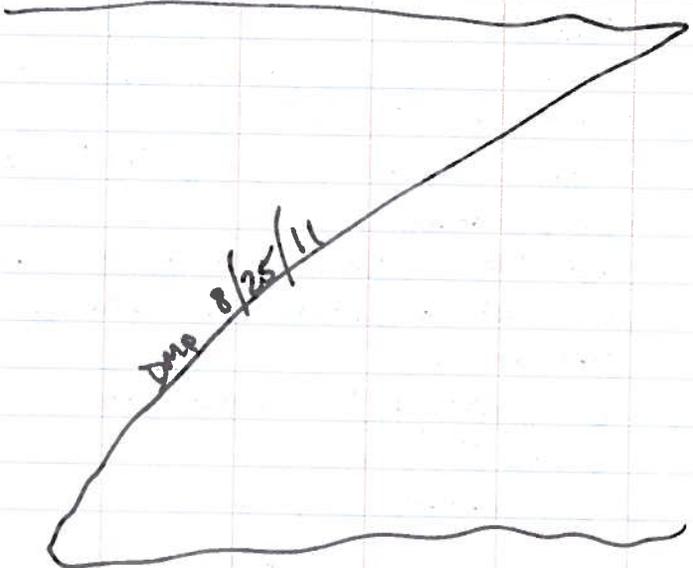
8/25/11 KMS Cap Inspection DMP

0745 Concrete curb is still undermined above  
a western outfall. Slope is too steep  
here.

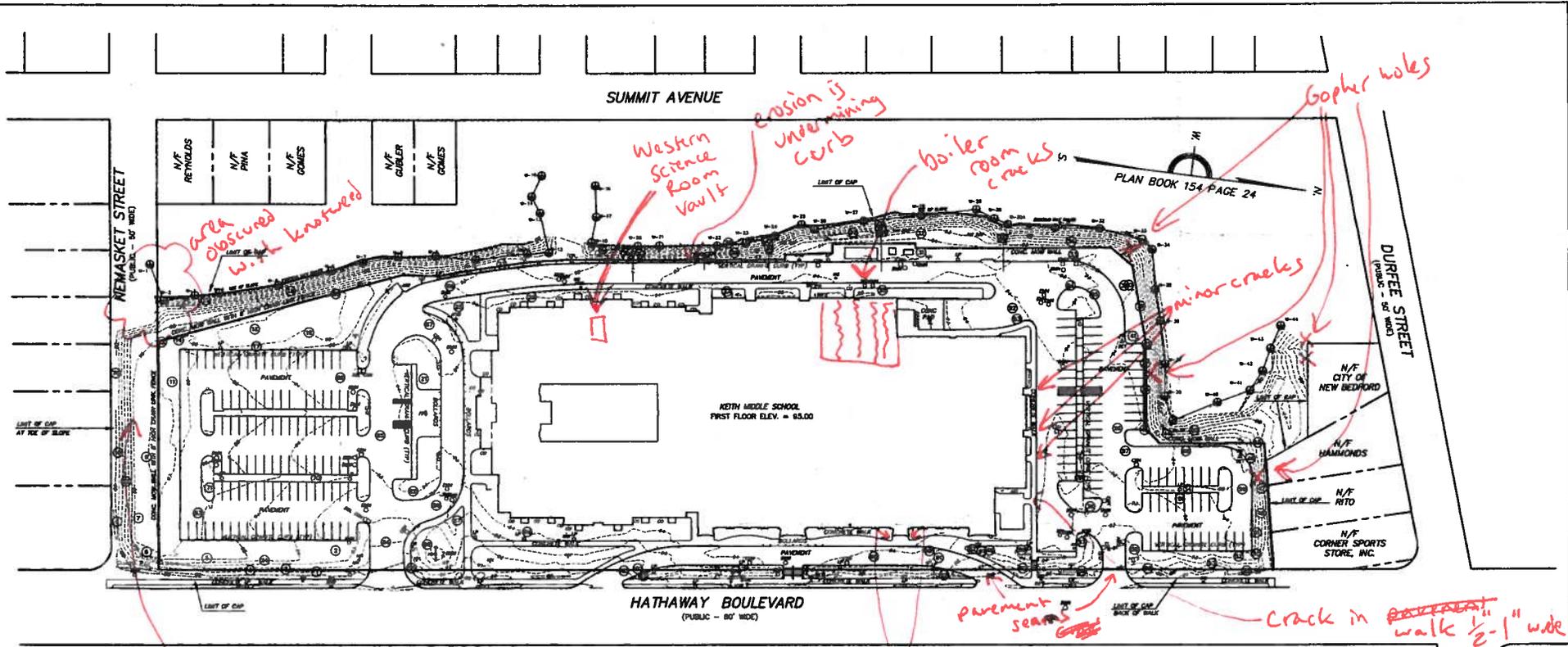
0950 Slope repair (previous) looks good.  
(Western portion of cap. south of  
last bridge)

10:00 Southwestern edge is poorly visible  
due to knotweed. Southern edge of  
cap looks very prone to erosion, but  
no serious rills now. This area should  
have topsoil, as vegetation is very sparse.  
(soil is too sandy)

10:15 Return keys to custodian  
DMP offsite.



DMP 8/25/11



- LEGEND**
- (with symbol) Obsolete
  - (with symbol) Monitoring Well
  - (with symbol) Flood Light
  - (with symbol) Survey Bull (Wood or Stone)
  - (with symbol) Sign
  - (with symbol) Sewer Manhole
  - (with symbol) Electric Manhole
  - (with symbol) Telephone Manhole
  - (with symbol) Catch Basin
  - (with symbol) Catchment
  - (with symbol) Chain Link Fence
  - (with symbol) Drive Manhole
  - (with symbol) Fire Hydrant
  - (with symbol) Light Pole
  - (with symbol) Railroad
  - (with symbol) Vertical Curved Curbing
  - (with symbol) Handhole
  - (with symbol) Water Gate
  - (with symbol) Gas Gate
  - (with symbol) Cap, Manhole, Catchment, Public

area OK, but needs topsoil

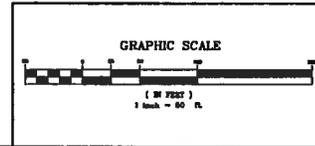
erosion under walkway. need to address landscaping

- Didn't see elevator sumps

I CERTIFY THAT THIS PLAN IS SUBSTANTIALLY CORRECT.  
 TOPOGRAPHICAL CONDITIONS SHOWN ARE THROUGH  
 DECEMBER 7, 2006.  
 FINAL CAP THICKNESS MEASUREMENTS ARE BASED UPON  
 ELEVATIONS OBTAINED THROUGH DECEMBER 11, 2006.

**AS-BUILT PLAN OF LAND**  
 LOCATED ON  
 HATHAWAY BOULEVARD  
 NEW BEDFORD, MASSACHUSETTS  
 OWNED BY  
 CITY OF NEW BEDFORD  
 DECEMBER 11, 2006 SCALE: 50 FEET TO AN INCH

DATE  
 BERNARD E. MUNRO, SR. P.L.S.#34482



REVISIONS			
NO.	DATE	DESIGN	CHECKED
1			
2			
3			
4			
5			
6			
7			

**LAND PLANNING, INC.**

BELLINGHAM: 167 HARTFORD AVE 02019 (508) 966-4130  
 GRAYTON: 214 WORCESTER ST 01519 (508) 839-8626  
 HOLDEN: 30 SUNNYSIDE AVE 01520 (508) 829-3006  
 HANSON: 1116 MAIN STREET 02341 (781) 294-4144

DATE: 12/11/06    JOB NO.: P-2192    DWG NO.: P2192PNTS    SHEET NO.: 1

**Attachment 2**  
**Cap Inspection Form**

## CAP INSPECTION FORM KEITH MIDDLE SCHOOL

Use this inspection form to document cap inspections. If unacceptable conditions are observed, complete an additional form immediately after repairs are completed.

Inspection Date: August 25, 2011

Inspection by: David Pettit

A. ASPHALT AND CONCRET PAVING – observe asphalt and concrete paving for cracking, holes, asphalt removed during construction, other damage.

Some very minor cracking of the concrete sidewalks was observed, and these cracks will be monitored during future inspections.

All Asphalt and concrete paving acceptable?  YES  NO

If no, attach photograph

If no, describe unacceptable condition:

1) Approximate 1/2-1 inch crack in concrete, see Photographs #6 and #7. 2) Caulking in joints between brick walls and concrete walkways is deteriorating, see Photograph #5. 3) Separation of the seams of the asphalt parking lot entrances, see Photograph #8

Location:

1) Walkway leading to the northern community room area of the school. 2) Several areas, including service way entry, and the patio at the northeastern portion of the building. 3) At the entrances to the KMS parking lot from Hathaway Boulevard.

Condition:

Describe any repairs to asphalt and/or concrete paving conducted since previous inspection: None

All repairs adequate  YES  NO      Photograph of repair attached

B. INTERIOR CONCRETE FLOORS – observe concrete for cracking, holes, concrete removed during construction, other damage.

Four cracks in the boiler room floor are less than 1/4-inch wide, see Photograph #3. Pipe penetrations appeared intact, see Photograph #4. The majority of interior concrete floors are covered with tiles or other type of flooring material. Based on visual inspection and conversations with current employees, there are no breaches or other significant damage or deterioration of the interior surficial flooring materials or, where visible, concrete floors (with one potential exception noted below). No construction was occurring within the building at the time of the inspection.

All interior concrete floors acceptable?  YES  NO

If no, attach photograph

If no, describe unacceptable condition:

Approximately 1 foot of water was observed in the sub-slab concrete vault located adjacent to the western science classrooms, see Photographs #1 and #2. The bottom of the vault could not be fully examined due to the presence of water, and the source of the water could not be determined.

Location:

Adjacent to the western science classrooms.

Condition:

The observable portions of the concrete vault and associated piping appeared intact, but the source of the water in the vault could not be determined. The presence of this water should be investigated further.

Describe any repairs to interior concrete floors conducted since previous inspection: None

All repairs adequate  YES  NO      Photograph of repair attached

C. LANDSCAPING – observe landscaping for erosion animal holes, excavation, erosion control vegetation health.

All landscaped areas acceptable?  YES  NO

If no, attach photograph

If no, describe unacceptable condition:

Location:

The steep slope just above the wetland, to the west of the southern parking lot and school, and the landscaped area adjacent to the walkway at the northern entrance to the school off Hathaway Blvd.

Condition:

1. The structural integrity of the fence may be compromised if the sloughing and erosion continues, see Photograph #12. The cap soils beneath the riprap may also become exposed and susceptible to erosion. The area appears stable at the moment, but the condition is likely due to an increase in steepness beyond the cap design slope. The extent of erosion seems similar to the conditions observed during several previous inspections. See inspection report letters dated May 11, 2010 and December 7, 2010.

2. Erosion of landscaped areas was observed adjacent to the concrete walkway entering the school building at the northern entrance from Hathaway Boulevard, see Photograph #9. The erosion has resulted in a loss of approximately 4 to 5 inches of soil. If left unrepaired, this could also compromise the integrity of the concrete walkway.

Describe any repairs to landscaping since previous inspection: Slope repair on the Western portion of the cap, south of the land bridge.

All repairs adequate  YES  NO      Photograph of repair attached

D. Areas Not Inspected:

1) Rooms 074 and 167 and the elevator vaults at the south and center of the school. 2) Southwestern soil caps.

Reason:

1) Could not gain access. 2) Covered with knotweed.

Additional Notes:

1. Some minor erosion had occurred in the past on the southern slope of the cap, as noted in the prior inspection report (dated December 7, 2010). Vegetation is present, although sparse in some areas, see Photograph #14. It is recommended that more topsoil and vegetation be added to limit future erosion.

2. Woody vegetation was observed in front of discharge structures at the edge of the wetland to the southeast of the building, see Photograph #13. The cap did not appear to be compromised by this vegetation at this point, but TRC has recommended cutting back this vegetation or using herbicides.

**Attachment 3**  
**Site Inspection Photographs**

**SITE PHOTOGRAPHS**  
**August 2011 Cap Inspection**  
**Keith Middle School**  
**New Bedford, Massachusetts**



**1) Standing water in science room vault.**



**2) Standing water in science room vault.**

Note: Photos were actually taken on August 25, 2011. The January 1, 2007 stamp in the lower right corner of each photo was the result of an unadjusted camera setting.

**SITE PHOTOGRAPHS**  
**August 2011 Cap Inspection**  
**Keith Middle School**  
**New Bedford, Massachusetts**



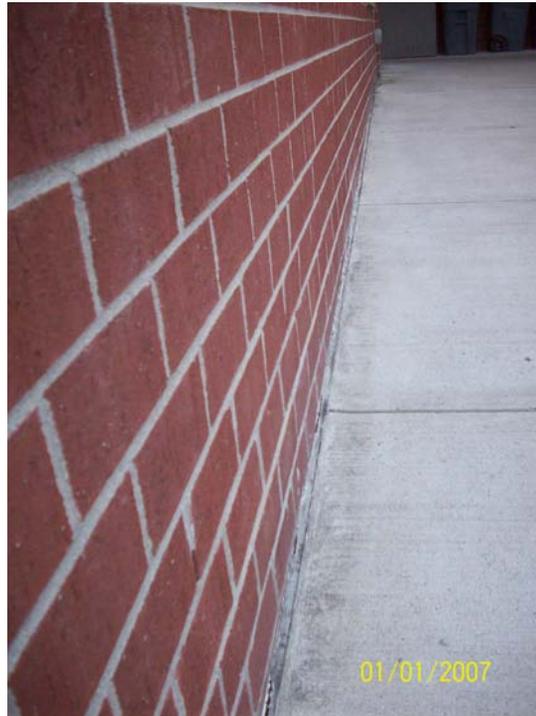
**3) Minor crack in boiler room floor.**



**4) Pipe penetrations in the boiler room.**

Note: Photos were actually taken on August 25, 2011. The January 1, 2007 stamp in the lower right corner of each photo was the result of an unadjusted camera setting.

**SITE PHOTOGRAPHS**  
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**5) Caulking at seam between building wall and concrete walk near the service entryway. Observations did not indicate potential for soil exposure.**



**6) Minor crack in walkway leading to community room area.**

Note: Photos were actually taken on August 25, 2011. The January 1, 2007 stamp in the lower right corner of each photo was the result of an unadjusted camera setting.

**SITE PHOTOGRAPHS**  
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**7) Significant crack in walkway leading to community room area.**



**8) Crack in asphalt parking lot north of school.**

Note: Photos were actually taken on August 25, 2011. The January 1, 2007 stamp in the lower right corner of each photo was the result of an unadjusted camera setting.

**SITE PHOTOGRAPHS**  
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**9) Undermining of concrete walkway.**



**11) Animal burrow north of school.**

Note: Photos were actually taken on August 25, 2011. The January 1, 2007 stamp in the lower right corner of each photo was the result of an unadjusted camera setting.

**SITE PHOTOGRAPHS**  
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**12) Undermining of concrete structure for fence west of school.**



**13) Knotweed-covered portion of cap southwest of school.**

Note: Photos were actually taken on August 25, 2011. The January 1, 2007 stamp in the lower right corner of each photo was the result of an unadjusted camera setting.

**SITE PHOTOGRAPHS**  
**August 2011 Cap Inspection**  
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**New Bedford, Massachusetts**



**14) Sparse vegetation on portion of cap south of school.**