There is a lack of attention and care when addressing the sites sustainability for the design of professional sporting venues. When projects that garner both the attention and budgets that professional sporting venues receive, it often becomes a wasted opportunity to enhance and help regenerate the natural benefits and services that can be received from having a healthy and sustainable site. This is why I am introducing SITES guidelines to this professional sporting venues site design. These guidelines will help regenerate and educate the importance of sustainable sites.
Twin Cities Army Ammunition Plant [TCAAP]
Arden Hills, Ramsey County, MN
Roughly **280** Acres
10 Miles North of Twin Cities
Or **240** Miles South-West of Fargo
The TCAAP is a former ammunition plant for the United States Army, and Minnesota's largest Superfund site.

SITES™ is an interdisciplinary effort to create voluntary guidelines and benchmarks for sustainable land design, construction and maintenance practices. SITES™ five main areas of focus are:

- Hydrology
- Soils
- Vegetation
- Materials
- Human Health & Well-being

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850</td>
<td>Settlers begin farming land</td>
</tr>
<tr>
<td>1941</td>
<td>Small arms ammo manufacture starts</td>
</tr>
<tr>
<td>1942</td>
<td>Solvents discovered in groundwater</td>
</tr>
<tr>
<td>1976</td>
<td>Ammo manufacture ceases</td>
</tr>
<tr>
<td>1981</td>
<td>TCAAP placed on Superfund list</td>
</tr>
<tr>
<td>1983</td>
<td>Federal government acquires land</td>
</tr>
<tr>
<td>1987</td>
<td>Cleanup is started by Army, EPA, &amp; MPCA</td>
</tr>
<tr>
<td>1991</td>
<td>Remedial investigation is completed</td>
</tr>
<tr>
<td>1994</td>
<td>Army declares TCAAP excess property</td>
</tr>
<tr>
<td>2002</td>
<td>TCAAP reutilization committee appointed</td>
</tr>
</tbody>
</table>

Parking for 24,000
Remediate contaminated sites
Connect to existing public transportation
Connect to existing trail systems
Low impact stadium placement
Water collection
Run off filtration
Plaza space/tailgating
FINDINGS

PARKING
- Non-Motorized Trail Connection
- Low Impact Stadium Placement
- Water Collection
- Water Filtration
- Tailgating and Plaza Spaces
- Plaza Space/Tailgating

NoN-MOTORIZED TRAIL CONNECTION
- Existing trail systems to create connections with existing trail systems to create connections with
- Areas on site that are currently contaminated with pollutants

PUBLIC TRANSPORTATION CONNECTION
- Existing public transportation routes to create connections with existing public transportation routes to create connections with
- Areas a stadium can be constructed with minimal soil disturbance and cut/fill

CONTAMINATION REMEDIATION
- Areas on site that are currently contaminated with pollutants
- Areas throughout the site where water can be collected
- Areas throughout the site where the water will be filtered

WATER COLLECTION
- Areas through out the site where water can be collected
- Areas to be design for the use of tailgating during games, as well as gather and plaza spaces for social interactions

WATER FILTRATION
- Areas through out the site where the water will be filtered

TAILGATING AND PLAZA SPACES
- Areas through out the site where water can be collected
- Areas to be design for the use of tailgating during games, as well as gather and plaza spaces for social interactions
Parking - 24,000 spaces
Remediation - VoCs in soil
Plaza/Open/Tailgating Space
Stadium - Roughly 80,000 seat
Roads - Accommodate Bus Route
Trail System - Connect to existing
PROJECT ELEMENTS

Parking
Trail System
Tailgating/Open Spaces
Site-K Remediation
Connections
S.I.T.E.S. 5 Focuses
Greenwall System:

- Rain Water Harvesting
- Trufstone Pavers
- Biofiltration

Greenwall Plants:

- Full Sun Plants:
  - Sedum album
  - Juniperus horizontalis 'Lime Glow'
- Partial Sun Plants:
  - Sedum 'Bailey’s Gold'
- Shade Plants:
  - Galium odoratum
  - Polystichum acrostichoides
  - Lysimachia nummularia 'Aurea'

- 8’ roots
- 1’ roots
- 1’ max depth
The shape mocks an empty handgun casing, this is to incorporate the important history of the site. The base mocks a rifle shell, while the light housing on top mocks a handgun round. These are meant to remind users of the site's unique history.

The benches are constructed from steel beams and concrete slabs/walls that will be extracted from the existing buildings when demolished. The building that the materials were extracted from will be painted on top to inform users about the unique bench and the site history.

Bench -

The TCAAP began ammunition production in 1942 and at their peak in 1943 employment reached 26,000, of which were mostly women.

Native Soil |  |
6" Gravel Sub Base | Filter Fabric | 12' | 6" Pervious Concrete

Timeline Information Sign

Helictotrichon sempervirens

Pervious Concrete

Solar Panel

Bench -

TRAILS
Public Transportation Route/Stop

Paver Stone Paths

Turf Grass

Tree Plantings [oak, Maple, Poplar]

TAILGATING / OPEN & ENTRANCE PLAZA
The Sustainable SITES Initiative Rating System:

<table>
<thead>
<tr>
<th>Star Level</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Star</td>
<td>100</td>
</tr>
<tr>
<td>Two Star</td>
<td>125</td>
</tr>
<tr>
<td>Three Star</td>
<td>150</td>
</tr>
<tr>
<td>Four Star</td>
<td>200</td>
</tr>
</tbody>
</table>

250 points total

4th and Sustainable completes all required credits, and 46 opportunities for a total of 195 optional credits. 195 out of 250 credits equals a Three Star rating.

In addition to this site, the TCAAP has roughly 100-150 acres of mostly wetlands bordering the north end of this site. If those acres were to be restored to their natural wetland habitat, this project would exceed 200 points and receive the highest rating of Four Stars.