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Environmental Complications and Solutions:

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The Menomonee Valley is a brownfield and required intensive environmental investigations in order to ascertain the state of the valley and the safety of redevelopment on the site. Studies were conducted on Flood Plain, Soil Contamination, Air Quality, Groundwater, and Stormwater Management, each one of these required mitigation efforts to bring the redevelopment into compliance with both State and Federal standards. The majority of the test and evaluations done to ensure conformity to codes and regulations has been performed by the Menomonee Valley Benchmark Initiative (MVBI). MVBI has identified and grouped 50 indicators, and will observe them in five-year intervals.

Flood Plain:





The Southeast Wisconsin Regional Planning Commission (SEWRPC) conducted a preliminary analysis of the flood plains, specifically at the Milwaukee Road Shops redevelopment site and Airline Yards site. The study found that the Shop site needed to be raised, but the Airline Yards development was for the most part excluded from the flood plain, negating the need for flood plain mitigation. SEWRPC also determined that the Shop site must withstand a 2,000 cubic feet per second flow in a 100-year old flood event. The Milwaukee Zoning Code also demands that the building floor be two feet above the regular flood elevation as well as any area within 15 feet of the building. Mitigation efforts began as eight feet of fill, transferred from the Marquette Interchange, were added to the Shop site. Restoring the natural environment is also an important measure that will contribute to the decrease in flooding. Another core component is the Hydraulic Modeling system. The USGS conducted a study of the flow systems present in the Menomonee Valley in order to determine the destination and effects of recharge in the valley. With this strategy the applicable 100 acres would have no surface water discharge. Developers maintain that the Shop site will be ready for construction in late 2006, early 2007 after the fill settles.











Soil Contamination:



Soil Contamination poses a potentially dangerous threat throughout the valley due to the history of the site. Prior construction the site was a wetland and then a railroad and industrial center. Because of peat moss deposits and the wetlands, methane gas is a risk across the valley. The railroads and industries have left relic structures including floor slabs, sewers and foundations, causing a risk for heavy metal and Polynuclear Aromatic Hydrocarbon contamination. As a result the redevelopment site has gone through extensive testing and geotechnical evaluations. In order to impede any further damage, developers have buried contaminated soil under several feet of fill, and severely contaminated soil was extricated to another location. A designated onsite placement area for contaminated soil will be created for future projects. Engineering and institutional controls for future developments include a long-term, right-of-entry agreement giving the city access to groundwater monitoring, sampling, and NAPL collection trench sampling ports and a mandatory two foot thick clean soil cover or pavement cover. In addition, methane mitigation is mandatory and is the responsibility of the developer; recommendations for methane mitigation include passive methane/soil gas collection systems.

Air Quality:

Menomonee Valley is centrally located in a metropolitan area, and while that holds many industrial benefits the air quality can be greatly compromised because of the placement of highways through the valley as well as its location near downtown Milwaukee. The MVBI is monitoring both mobile and non-mobile emissions to determine the severity of impact on the air quality at the site of the redevelopment project. In addition to monitoring the Fine Particulate Matter (PM2.5), MVBI is monitoring five prevalent air toxins; Formaldehyde, Acetaldehyde, Benzene, 1,3-Butadiene, and PCBs, and both one hour and eight hour ozone concentrations.

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The PM2.5 are being recorded every third calendar day by the Wisconsin Department of Natural Resources in various locations across the valley. These PM2.5 pose a significant threat to humans, once they are inhaled they are imbedded into the deep lunge tissue causing respiratory problems and a variety of health issues. The National Ambient Air Quality Standards set the average annual concentrations below 15ug/m3, and average 24-hour concentrations no greater than 65ug/m3. Over the past six years the amount of PM2.5s is declining rapidly and falls within the federal standards.

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| Toxic Compounds | (cancer risk)  1 in 100,000 | 1 in 1,000,000 |
| Acetaldehyde | .45ug/m3 | 4.5ug/m3 |
| Formaldehyde | .077ug/m3 | .77ug/m3 |
| 1,3-Butadiene | .3ug/m3 | .033ug/m3 |
| Benzene | 1.3ug/m3 | .13ug/m3 |

Fifty-six toxic compounds are presently being monitored at Menomonee Valley. Of the fifty-six, Formaldehyde, Acetaldehyde, Benzene, 1,3-Butadiene, and PCBs have been assessed as the highest health risk. These compounds are known to be possible carcinogens, causing various other health conditions, and have a negative effect on the environment. These toxins

were observed from 2000-2004 at Valley 1, located at 1337 S. Cesar Chavez Drive. As no National Ambient Air Quality Standards address toxic compounds the Environmental Protection Agency standards were applied (see table). Of the five compounds only 1,3-Butadiene is below the standard. PCBs in 2004 finally declined, falling below the Environmental Protection Agency’s annual average of 0.45ng/m3. In all prior years (2000-2003), the average of PCBs at Valley 1 exceeded the Environmental Protection Agency’s recommended maximum average.

The final component that the MVBI recorded was the one hour and eight hour ozone concentrations. The National Ambient Air Quality Standards establish that the average one-hour ozone concentration cannot exceed 124 ppb (parts per billion) and the average eight-hour ozone concentration cannot exceed 84 ppb. Observations took place at Valley 1 and hourly readings were recorded; the greatest reading of the day is termed the daily peak 1-hour ozone concentration. The average daily peak 1-hour ozone concentrations were well below the standards and were considerably lower in 2004 than in 2003. The eight-hour ozone standard is the federal government standard that replaced the 1-hour ozone standard. Likewise, the average daily peak 8-hour ozone concentration was significantly lower than the 84ppb standard. The highest readings in close proximity to the valley were 74ppb and 82ppb, still below the federal standard.





Groundwater:

The groundwater within the Menomonee Valley was examined meticulously by the City of Milwaukee and USGS from 1999-2001. The study was divided into separate parts, the first studying the location and flow of the groundwater through the valley, and the second determined the extent of contamination through chemical sampling (It is important to note that the final location of all surface water was impossible to determine conclusively because of the history of the site and the various waterways). Studies determined that there were two main receptors for shallow groundwater; the Deep Tunnel System and the Menomonee River, flowing into Lake Michigan. For surface water within 100 feet of river or canals, the final destination was not conclusive. Nevertheless, the approximate time for groundwater to travel from the valley to the Deep Tunnel System is 250 years, which is a substantial amount of time allowing for elimination of contaminants through natural mechanisms. In the event that contaminates are not completely dissolved, all water from the Deep Tunnel System is directed to the Jones Island Treatment Plant. The USGS confirmed that there was little cross flow between properties, negating the potential for widespread groundwater contamination. However, some site-specific contamination was present and can be handled on a case-by-case basis with the assistance of the Wisconsin Department of Natural Resources (WDNR). Typically mitigation measures such as removing the effected soil and monitoring for 1-2 years should rectify the situation.

(For more information regarding the groundwater study click here [http://www.renewthevalley.org/files/pdf/epareport.pdf])

Stormwater Management:

The Menomonee Valley stormwater management stratagem is founded on natural means. Developers are restoring wetlands and green space once prevalent in the valley and incorporating stormwater management into parks. There will be two main stormwater management areas and a Swamp Forest to accommodate stormwater from the surrounding developments. These three areas will treat stormwater in three steps. First, all water will be collected and transferred through a system of pipes where it will accumulate in small pools of water. Second, stormwater will

disperse across the shallow wetland meadows and will infiltrate through crushed pieces of concrete (this layer is known as an ‘infiltration gallery’). The stormwater will then be distributed to the Swamp Forest where the natural vegetation will remove contaminants. In order to decrease the actual amount of stormwater, builders must limit the number of impervious surfaces. By promoting permeable surfaces infiltration of stormwater will be amplified. Builders are also being urged to increase canopy coverage on their property, which will in turn contribute to the reduction of stormwater.

(For more information on MVBI Click Here [http://epic.cuir.uwm.edu/mvbi/other\_docs.htm])

(For more information on the Master Land Use Plan Click Here [http://www.renewthevalley.org/files/pdf/MVIC%20-%20Master%20Use%20Plan%20-%20RACM%20Adopted.pdf])

Financial Structure

Section 108$10,000,000

BEDI $2,000,000

EPA Clean Up Grant $200,000

EDA BCR Loan Fund $1,125,000

HUD Neighborhood Grant $1,950,000

DNR SUDA Grant $837,000

WI Commerce Grant $1,250,000

Redevelopment Authority Loan $6,475,000

Total:$23,837,000