

Title: Characterization of Shallow Groundwater in Detroit: Environmental, Hydraulic, and Health Considerations

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Abstract: Groundwater plays a critical role in the vitality of the Great Lakes Basin, supplying drinking water, industrial water supply, cooling water for power generation, and irrigation water for farms in rural areas and landscape in urban areas. It also is interconnected with surface water features, including the lakes, streams, and reservoirs of the region. Therefore, the quality of the groundwater is crucial and has potential economic, health, and social implications for the region. The traditional focus of environmental and health concern, especially in urban areas, has been on surface water rather than groundwater, following the “out of sight, out of mind” mentality. The lack of data on groundwater (especially shallow, near-surface) flow, quality, and transport in urban centers is a threat to the health of the Great Lakes Basin. Two approaches are being used to evaluate groundwater in southeast Michigan. The first approach is constructing a neighborhood scale urban water budget at Recovery Park. This water budget model will contribute to evaluating urban groundwater flow in urban settings with limited groundwater data. The second approach is compiling a regional groundwater model within four major watersheds to address the general groundwater flow direction in the Detroit region. Both the regional and neighborhood scale models will help develop and evaluate the potential risks posed to urban environments and human health.