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FOR REVIEW BY UPPER SWAG MEMBERS

2003 PROGRESS MEASURES

INTERIM REPORT

ROUGE RIVER UPPER SUBWATERSHED MANAGEMENT PLAN

*Prepared on behalf of the
Upper Subwatershed Advisory Group*

Members

City of Livonia, Chair
City of Farmington Hills, Vice Chair
Oakland County (Drain Commissioner, Department of Health, Road Commission)
Wayne County (Departments of Environment, Health and Public Services)

Redford Township, Commerce Township
West Bloomfield Township, City of Novi
Northville Township, City of Farmington
Michigan Department of Transportation

2003 PROGRESS MEASURES

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BACKGROUND

The *Upper Subwatershed Management Plan* was developed and formally adopted in November of 2001, through the cooperative efforts of eight townships and cities, two counties and the Michigan Department of Transportation as partial fulfillment of the National Pollution Discharge Elimination System (NPDES) requirements for the authorization to discharge storm water from publicly owned and operated separate storm water facilities.

At the time the plan was adopted only two of the public entities involved (MDOT and the City of Livonia) were required to obtain a storm water discharge permit under Phase I of the U.S. Environmental Protection Agency storm water regulations administered by the Michigan Department of Environmental Quality. The remainder of the local agencies involved (i.e. Wayne and Oakland counties, the cities of Farmington, Farmington Hills and Novi and the townships of West Bloomfield, Commerce, Northville, and Redford participated in the development of the Upper Subwatershed Management Plan on a voluntary basis to obtain storm water discharge authorization under the state's voluntary, watershed-based, general storm water permit.

Subsequent to the development of the plan, Phase II of the U.S. EPA storm water regulations were adopted and required all local units of government within the Upper Subwatershed to obtain a storm water permit. All cities, townships and counties within the Upper Subwatershed have sought coverage under the watershed-based, storm water general permit option developed by the MDEQ in response to the Phase II federal regulations. The Upper Subwatershed Management Plan is a required element of this new Phase II storm water permit.

INTRODUCTION

Chapter 8 of the Upper Subwatershed Management Plan established *Methods to Measure Progress* for each of the long-term goals and short-term objectives (goals). This interim report prepared on behalf of the Upper SWAG members provides an update on the status of each of the progress measures established in the plan. Annual benchmarks of accomplishments were projected for each of five overall goals: (1) **protect public health;** (2) **reduce excessive flows;** (3) **protect and restore river ecosystem for fish and wildlife;** (4) **restore and maintain aesthetically appealing conditions;** and, (5) **minimize upland soil erosion and related sedimentation.** At the time the Upper Subwatershed Management Plan was adopted, a new series of water quality samples were to be collected during 2003 to help evaluate the success of activities designed to

accomplish the objectives. However, a revised sampling plan encompassing the entire Rouge River watershed was developed under the Rouge River National Wet Weather Demonstration Project (Rouge Project) that altered the original schedule. That sampling plan, reviewed and approved by the Water Division of the Michigan Department of Environmental Quality, delayed water quality monitoring for specific parameters in the Upper Rouge River until calendar year 2004, the results of which will not be available to the Upper SWAG until early 2005.

This interim report covers those benchmarks of progress established in the Upper Subwatershed Management through 2003 (shown in boxed text) with the exception of those that will be reported on following the completion of the 2004 sampling of the Upper Subwatershed. A summary of the changes is shown in the last exhibit of this interim report.

PROGRESS MEASURES

1. Protect Public Health

By 2003, the Upper SWAG members will cooperate in conducting indicator bacteria sampling during dry water conditions at key locations in the Upper Rouge River to determine whether conditions at key locations in the Upper Rouge river to determine whether or not sources of untreated human waste have been effectively reduced through control of illicit connections and failing OSDS.

Progress: Under the revised sampling plan bacteria water quality samples will be collected during 2004. Results will be reported in 2005 and appropriated new initiatives will be proposed if measures to control sources of untreated human waste have not resulted in satisfactory reductions in bacteria levels.

2. Reduce Excessive Flows

From 2001 through 2005, the Upper SWAG members will maintain flow data monitoring locations already established within the upper subwatershed and add new flow monitoring locations, if required, to measure progress toward achieving short-term objective (goal).

From 2001 through 2005, the Upper SWAG members will cooperate in collecting and analyzing storm water flow data to determine whether or not proposed actions have stopped or reduced the trend of increasing frequency, volume and velocity of flood flows caused by new developments.

Progress: As part of the Rouge Project, flow monitoring at USGS gauging stations has been conducted on a continuous basis since adoption of the Upper Subwatershed Management Plan. Communities within the Rouge River watershed, through the newly formed Rouge River Watershed Local Management Assembly (Rouge Assembly), provided fifty percent of the cost of this monitoring during 2003. The Rouge Assembly plans to continue to support this activity with funding at least through 2004. As actions are taken to mitigate flows within the Upper Subwatershed, this monitoring data will be used to evaluate success in minimizing increases and/or reducing excessive flows.

By 2003, the city of Livonia will complete its pilot study to determine the cost and effectiveness of off-channel regional storm water detention facilities.

By 2003, the city of Farmington Hills will complete its assessment of maintenance funding alternatives to ensure that existing detention facilities achieve original design standards for retention of storm water.

Progress: The city of Livonia has completed a preliminary evaluation of the feasibility of constructing an off-channel, regional storm water detention on the city owned, Idyl Wyld Golf Course funded by a matching grant from the Rouge Project. A proposal to construct the facility has been submitted and approved for matching grant funds as part of the Rouge Project. A request for funds to support the project have been submitted by the city to the MDEQ under the Clean Michigan Initiative and approval in of the matching state grant funds is pending.

The city of Farmington Hills has received a Rouge Project grant for fifty percent of the cost to complete an assessment of alternatives for the maintenance of storm water detention facilities constructed on private property within the city over the last thirty years. The study will evaluate legal alternatives for the cost of repair and maintenance of previously constructed storm water detention facilities that were required under the site plan approval process. The study will be initiated in 2003 and completed in early 2004. The goal is to achieve the original design standards of these facilities to ameliorate storm water flows thereby reducing the damage associated with excessive flows emanating from these residential and commercial developments.

By 2003, the Upper SWAG member will complete studies of alternative institutional arrangements to provide authority for public agencies to remove specific fallen trees and other flow obstructions.

Progress: Upper Rouge communities continue to provide removal of fallen trees and other stream flow obstructions on an emergency, as needed, basis to protect public and private property from flooding. Funding for such activities is limited. The most significant problem in many areas where obstructions need to be removed is access for the heavy equipment required to extract fallen trees from the river. Both physical and legal

access is often a limiting factor in the community's ability to provide emergency services to prevent flooding due to obstructions. The communities continue to evaluate alternative mechanisms to provide short-term, emergency actions to protect property subject to flooding and severe bank erosion. For those areas of the Upper Rouge designated under various sections of the Michigan Drain, there may be an opportunity to obtain legal access and raise funds to address severe and persistent problems.

3. Protect and Restore River Ecosystem for Fish and Wildlife

By 2003, the Upper SWAG members will cooperate in measuring dissolved oxygen levels at key locations during selected 24 hour periods from June through September to determine whether or not pollution prevention activities have been effective in achieving the water quality standard to protect warmwater fish (e.g. a minimum of 5.0 milligrams of dissolved oxygen per liter)

As indicated previously, sampling of the Upper Rouge will be conducted in 2004 to evaluate the effectiveness of various best management practices employed to prevent pollution that contributes to the decrease in dissolved oxygen in the Upper Rouge during critical periods from June through September.

4. Restore and Maintain Aesthetically Appealing Conditions

By 2003, the Upper SWAG members will cooperate with other Rouge River subwatershed groups to identify and survey selected riparian property owners to determine whether or not the perceptions of aesthetic conditions have improved as a result of actions taken to build community support for stewardship of the river.

This progress measure is being combined with the following measure designed to evaluate public education and river stewardship.

By 2004, the Upper SWAG members will cooperate with other Rouge River subwatershed groups to survey residents to evaluate the effectiveness of programs designed to increase public awareness and stewardship of the river.

Progress: A telephone survey of Rouge River watershed residents was conducted in 1993 and again in 2000 to measure the effectiveness of various public information/education initiatives developed under the Rouge Project. As part of these two surveys, residents were asked, among other things, their perception of the river and the degree of pollution. The Public Involvement Committee of the Rouge Assembly is currently considering a third survey in 2004 to measure progress in the public's knowledge about the Rouge River, effectiveness of various education efforts, and public attitudes. If conducted by the

Rouge Assembly, this survey will also provide a measure of the public perceptions of the river's aesthetic conditions and whether or not, in the public's view, there has been improvement.

5. Minimize Upland Soil Erosion and Related Sedimentation

By 2003, the Upper SWAG members will conduct a survey to determine how the results of current studies on the frequency of road sweeping and catch basin maintenance have been used to implement best management practices in the subwatershed to prevent sediments from entering the river.

Progress: At its September 16, 2003, meeting the Upper SWAG heard summary reports from three Upper Rouge communities that had conducted intensive studies to evaluate the effectiveness of street sweeping and/or catch basin cleaning on the amount of pollutants reaching the river. The following is a brief summary of these three studies:

Livonia Storm Sewer Maintenance Study – With a matching grant from the Rouge Project, the city retained the engineering firm of Hubbel Roth and Clark to prepare a report on four pilot areas within Livonia to evaluate the effectiveness of various street sweeping/catch basin cleaning options in preventing sediments from reaching the river. The study was completed in December of 2001 and evaluated results from one commercial, two residential and one recreational parking lot. A Simplified Particulate Transport Model was used with actual street dirt accumulation and associated pollutant concentrations to calibrate the model.

The study concluded that existing street sweeping practices (i.e., 4 times per year) reduced pollutant wash offs by 19 to 33% depending on whether mechanical or regenerative air sweeping was performed. In addition, the study estimated that current storm catch basin cleaning once every 2.5 years reduced total dissolved solids reaching the river by an additional 5% per year. The study suggested that the optimum street sweeping frequency was 17 times per year for residential streets with a potential reduction of 76-81% pollutant wash off loading from residential streets.

The study concluded that increased frequency of catch basin cleaning above current levels would not be justified based upon the additional materials removed. Commercial parking lots are not currently swept by the city, or routinely by property owners. According to the study, these commercial sites represent nearly three times the pollution loading, as do residential streets. Recreational parking areas, on the other hand, showed relatively low contribution of pollutants compared to either residential streets or commercial parking lots.

Redford Storm Water Source Control – With a matching grant from the Rouge Project, the township retained Wade-Trim/Associates to conduct a study on four isolated residential areas that were each served by a storm sewer system with a single outlet pipe. The purpose of the study was to evaluate the effectiveness of three source control measures (i.e., street sweeping, catch basin restriction and catch basin cleaning) in reducing the total

dissolved solids, BOD, chlorides, total phosphorous, and oil/grease. Prior to implementing selected source control measures the outlet storm water discharge for each area was sampled. Subsequent samples followed the application of various methods of source control in the study areas. The study results indicated, “The data is inconclusive with respect to demonstrating whether street sweeping, manhole cleaning, or catch basin restrictions improves the quality of storm water runoff from residential areas.”

Farmington Hills Catch Basin Cleaning Study – With a matching grant from the Rouge Project, the city retained Tetra Tech, Inc. to evaluate the affect of increased catch basin cleaning on pollutant loadings to the Rouge River from city residential areas. Quoting from the Executive Summary of this report:

During eleven rain events, storm water was sampled downstream of four residential drainage areas and tested for pollutant concentrations. Catch basins within two of the four drainage areas were cleaned at the beginning of the project, while the catch basins within the other two areas were left containing sediment and floatables. Pollutant concentrations and loadings were compared between the areas where catch basins had been cleaned and where catch basins had not been cleaned. The sediment removed from the cleaned catch basins was also analyzed.

As other studies have shown, catch basin cleaning was determined not to be cost-effective for reducing storm water pollution. In fact, the storm water and sediment analysis data from this study suggest that catch basin cleaning can increase the amount of some downstream pollutants for a few months after cleaning. Previously deposited sediment appears to help trap suspended particulates in storm water as it passes through a catch basin. Frequent cleaning of catch basins may increase storm water pollutants downstream of catch basins, while infrequent cleaning may result in clogging of catch basins. Therefore, the City’s current practice of cleaning catch basins every few years seems acceptable.

Summary of Studies

All three studies indicated that increasing the current frequency of catch basin cleaning within the three communities would unlikely result in significant improvements in the quality of storm water discharged. One study indicated that partially full catch basin may be more effective than recently cleaned catch basins in removing certain pollutants. One of the three studies indicated that increased frequency of street sweeping, up to seventeen times yearly with high-efficiency sweepers or regenerative air sweepers, could remove up to 81% of pollutants emanating from residential areas. However, the same study indicated that the majority of storm water runoff pollutants were from commercial parking areas not swept by local governmental units.

Based upon the high cost of implementing more frequent street sweeping and the cost of purchasing newer, more efficient street sweepers, the Upper Rouge communities are not

planning to increase street sweeping frequency at this time of serious financial constraints. Maintaining existing storm sewer catch basin cleaning schedules, and current street sweeping frequencies, where sweeping now occurs, remains the priority.

By 2003, the Upper SWAG members will prepare a summary report of the number and hours of technical training provided to local officials administering soil erosion control activities in the subwatershed.

Progress: The following table summarizes the number of hours of technical training provided to local officials of Upper Rouge Communities that administer local and/or state soil erosion control activities within the Upper Subwatershed.

**Survey of Upper SWAG Members Soil Erosion and Sedimentation Control Training
(2001 through 2004)**

Governmental Entity	Summary of Soil Erosion Training	Administers State Soil Erosion and Sediment. Control Permitting Program Yes or Not Applicable	Number of Individuals Trained (2002-2003)	Average Hours of Training (02/03)	Estimated Total Hours of Training (02/03)	Percent Current Staff Trained to Date (2001 to date)	Number Scheduled for Training (03/04)
Livonia 19	CERTIFIED	YES	3	16	48	95%	1
Farmington Hills		YES	7	16	112	67%	3
Farmington		NA					
West Bloomfield Twp		YES	3	24	72	100%	0
Commerce Twp.		Local Only	2	32	32	75%	2
Novi		YES	9	16	144	100%	0
Northville Twp.		NA					
Redford Twp.		NA					
MDOT		NA					
Oakland Co. Drain Com.		See <u>Note 1</u>					
Wayne Co. DOE (LRMD-SESC)		YES See <u>Note 2</u>	4*	16	64	100%	0
Wayne Co. DOE (FMD)		APA	3*	16	48		
Wayne Co. DPS (Roads & Engineering)		APA	16*	16	244		6
Total for Upper Subwatershed			47	152	916	N.A.	12

Note 1 – The Oakland County Drain Commissioner serves as local Soil Erosion Control Administrator for only one community in the Upper Subwatershed (i.e. City of Farmington) as is reporting status of soil erosion training as part of SWIPPI requirements that cover over Rouge subwatersheds.

Note 2- Fourteen (14) Wayne County DOE staff have soil erosion training but are not certified. Watershed Management Div (WMD) –5 staff, Land Resource Management Div. (LRMD) (9 staff)

*Current Certification for SCEC

Land Resource Management Div (LRMD)-SESC-four staff

Wayne Co. DPS (Roads & Engineering)-16 staff

Wayne Co. DOE (Facilities Management Div)-3 staff

Wayne Co. DOE (Watershed Management Div)-1 staff

SUMMARY OF CHANGES IN PROGRESS MEASURES

Progress Measure	Responsible Agency	Year				
		2001	2002	2003	2004	2005
Protect Public Health						
Bacteria Sampling	Assembly			→	█	
New Initiatives	SWAG				→	█
CSO & SSO Compliance	SWAG					█
Reduce Excessive Flows						
Analyze Flow Data	Assembly	█	█	█	█	█
Maintain Flow Data	Assembly	█	█	█	█	█
Inventory Flood Plains and Wetlands	MDEQ				█	
Evaluate Regulations	MDEQ					█
Off-Channel Storage	Livonia			█		
Financing Options for Existing Basins	Farm. Hills			→	█	
Financing/Institution for Channel Maintenance	Wayne Co.			█		
Enhance River Ecosystem						
D.O. Monitoring	Assembly			→	█	
Monitor Biological Com.	MDEQ					█
Restore Aesthetics						
Evaluate Public I & E Riparian Sur./Aesthetics	Combine Assembly			→	█	
Modify I & E	SWAG					█
Minimize Erosion						
Application of BMP Street & Catch Basin Cleaning	SWAG	█	█	█	█	→
Report on Tech. Train. Erosion & Sed. Control	SWAG			█		

Changes from **Summary of Progress Measures Upper Subwatershed Management Plan November 2001**: Responsible party changed to Rouge Assembly in some cases and arrows indicate changes in original target dates explained in text.