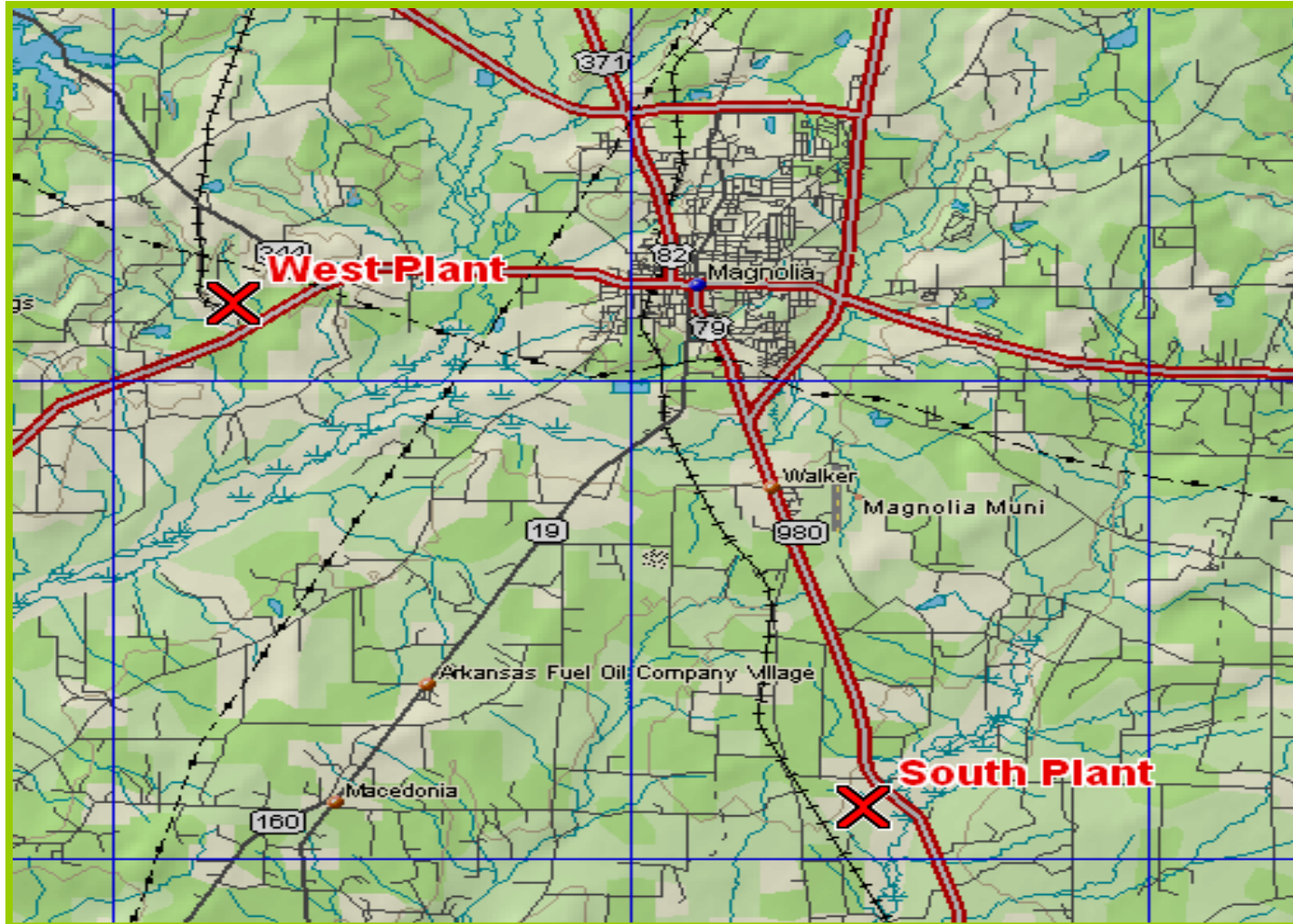




3rd Annual Storm Water Conference
U of A Community College At Hope
August 4, 2011



Magnolia Plants - Storm Water Management



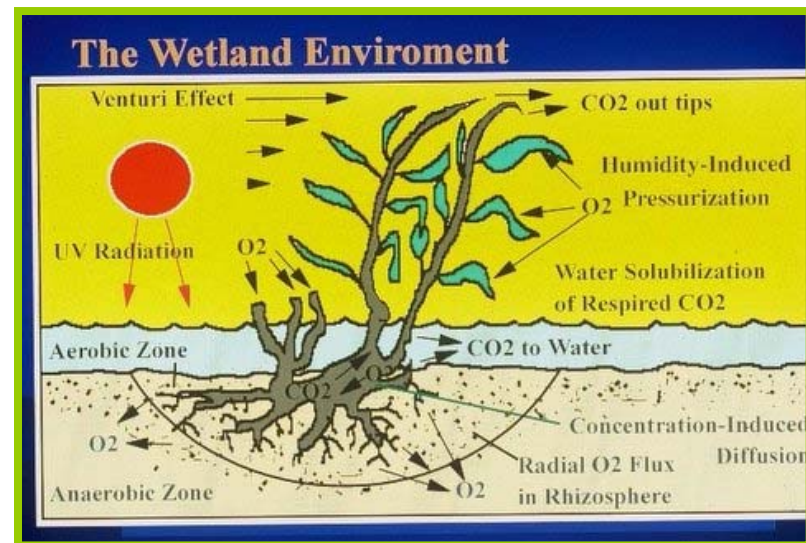
- **Magnolia Plants produce specialty chemicals**
 - **South Plant built in 1968**
 - **West Plant acquired from Dow Chemical in 1987**

- **South Plant constructed state/area's first artificial wetlands in 1993 to treat storm water and other non-process water**
- **West Plant constructed artificial wetlands in 1995 for same purpose**





- Different types of plants used to host billions of natural microbes
- Microbes break down any trace contaminants to basic elements (C,N, O₂)
- Helps buffer pH in water
- Inlet lagoons act as settling ponds and the plants act as filters to control TSS
- Microbes work during all four seasons



- **Initial design needs good flow and loading calculations for optimum length to width ratio**
- **Good hydrology is the key to success**
- **Diverse plant types aid in continued growth and success of the wetlands**
- **This design works extremely well for trace levels of organics, metals, pH, and turbidity**

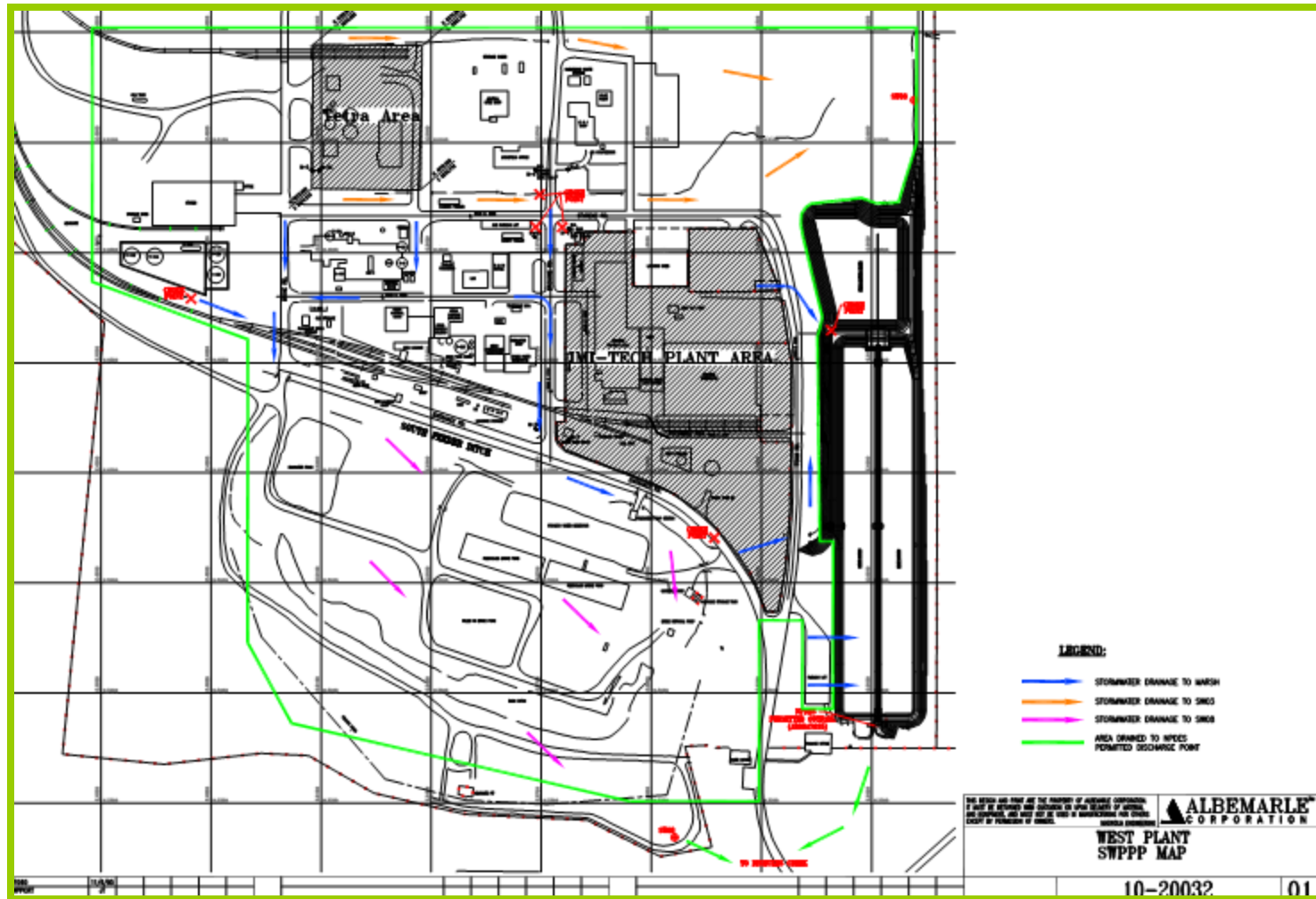
- **Site spill plan keeps material out of the marsh**
- **Storm water discharge quality improved greatly at plants**
- **Invite visitors – Great PR!**
- **High school students gain “hands on” experience sampling water in the field**
- **Helped use achieve Wildlife Habitat Council certification – Corp Lands For Learning® Site**
- **Increased the wildlife habitat in and around our plant sites**







- **Our goal was to cover all storm water discharges with existing NPDES permits**
- **Several areas required extensive dirt work to make this happen**
- **Two areas of industrial activity at our West Plant could not be covered by the existing NPDES permit without costly construction**
- **We ended up with two storm water outfalls**
- **Other companies may be able to use general discharge permit for cooling tower discharge, etc.**



- Increased sampling/site inspections
- Annual DMR report now due
- Changes to sampling timing and definition of measurable storm events
- Benchmarks are not permit limits, but show if you BMP's are working
- Corrective action plan must be developed if benchmarks are exceeded (beware of 2 failures in a row)
- Can request waiver if below benchmarks for two years (some of the analyses are new to the IGP)

<u>Effluent Characteristics</u>		<u>Parameter Benchmark Value</u>	
		Concentration (mg/l, unless otherwise specified)	
		Maximum	
		<u>Minimum</u>	<u>Maximum</u>
pH		6.0 s.u.	9.0 s.u.
Chemical Oxygen Demand (COD)		120	
Total Suspended Solids (TSS)		100	
Oil & Grease		15	
In addition to the above effluent characteristics, the following Effluent Characteristics, which are based on Industrial Sectors as defined in Part 1.5, must also be monitored. (Please note that not all sectors listed in Part 1.5 have additional characteristics.)			
<u>Sector</u>	<u>Sector Description</u>	<u>Effluent Characteristics</u>	<u>Parameter Benchmark Value</u>
A1	General Sawmills and Planing Mills (SIC 2421)	Total Zinc	0.684 mg/L
A2	Wood Preserving (SIC 2491)	Total Arsenic	0.169 mg/L
		Total Copper	0.0756 mg/L
C1	Agricultural Chemicals (SIC 2873-2879)	Nitrate plus Nitrite Nitrogen	0.68 mg/L
		Total Lead	0.519 mg/L
		Total Iron	1.0 mg/L
		Total Zinc	0.684 mg/L
C2	Industrial Inorganic Chemicals (SIC 2812-2819)	Phosphorus	2.0 mg/L
		Total Aluminum	0.75 mg/L
		Total Iron	1.0 mg/L
		Nitrate plus Nitrite Nitrogen	0.68 mg/L

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