Escanaba Mill

Papermakers for Fish

An Overview of Verso Escanaba and Water Quality

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Verso – Escanaba Operations

Verso At-A-Glance

WHO WE ARE
Verso makes printing papers used primarily in commercial printing, media and marketing applications, including magazines, catalogs, books, direct mail, corporate collateral and retail inserts. Our specialty papers are used primarily in label and converting, flexible packaging and technical paper applications. We also produce market kraft pulp, which is used to manufacture printing and writing paper grades and tissue products.

3.1
billion in sales*

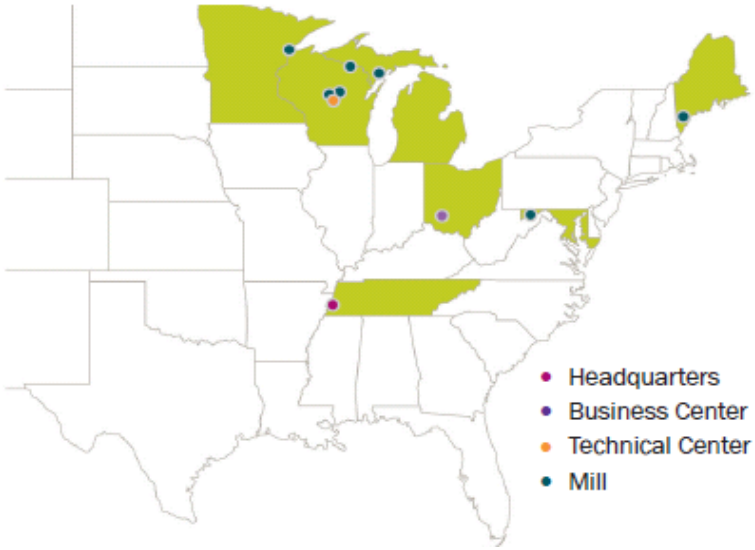
Verso's net sales are $3.1 billion.

3.2
million tons**

Verso mills have a total annual paper production capacity of approximately 3.2 million tons of paper.

4,800
employees**

Verso employs nearly 4,800 people nationwide.



10
locations

Verso is headquartered in Memphis, Tennessee, with a business center in Miamisburg, Ohio; Technical Center in Biron, Wisconsin; and mills in Maine, Maryland, Michigan, Minnesota and Wisconsin.

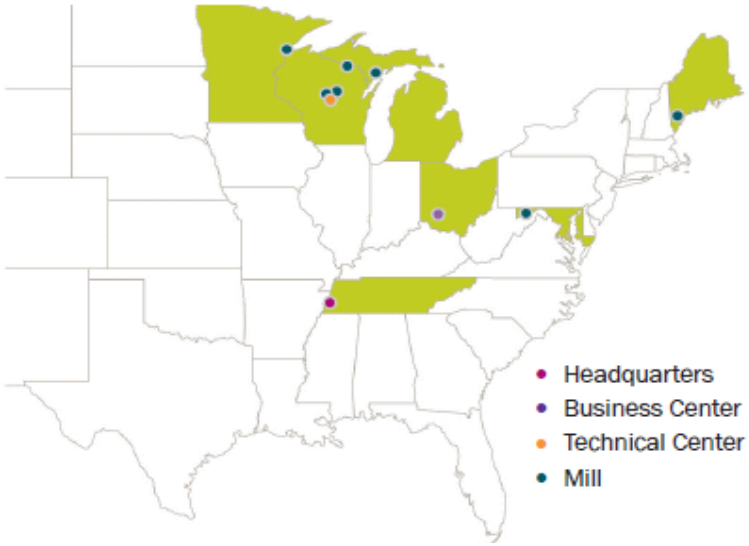
Verso's mission is to create value for our stakeholders by providing business solutions and developing innovative products and services that exceed expectations.

*For the year ended December 31, 2015 **As of May 31, 2016

Manufacturing Flexibility and Unparalleled Service

The locations of our paper mills and warehouses provide logistical advantages as a result of their close proximity to the fibers required for our products and to many major printers and converters, resulting in cost-effective shipping and quicker delivery to those markets.

Turn to us for manufacturing flexibility…



With multiple machines qualified to make the same products, Verso is able to offer unmatched flexibility in manufacturing.

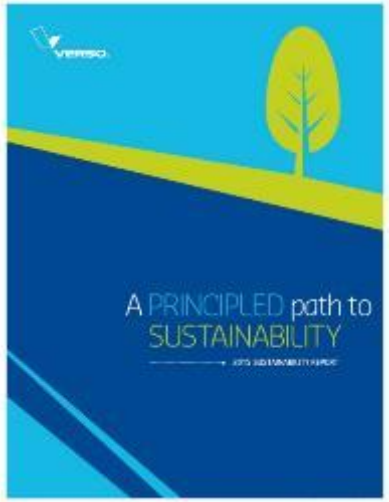
The flexible machine platform offers customers a back up of supply with Verso in addition to flexibility that meets required press dates.

CAPACITY (PAPER ONLY) /GRADES PRODUCED

MILL	CAPACITY (000 TONS)	GRADES PRODUCED
Androscoggin (Jay, ME)	450	CFS, CGW, UFS, Specialty
Duluth, MN	270	Supercalendered
Escanaba, MI	760	CFS, CGW, Specialty, Uncoated
Luke, MD	500	CFS, Specialty
Quinnesec, MI	425	CFS
Stevens Point, WI	190	Specialty
Wisconsin Rapids, WI	560	CFS, Specialty
TOTAL	3.2 MILLION TONS OF PAPER	

Turn to us for sustainability leadership…

2015 Sustainability Highlights



- Lost Workday Incident Rate (LWIR) improved 10% to 0.54; however, the company's Total Incident Rate (TIR) increased slightly to 1.44.
- 48% of the fiber used in our products was third-party certified and 32% of our total paper sold was chain-of-custody certified.
- Carbon-neutral, wood-based biomass accounted for 64.4% of on-site energy generated at our mills.
- Over 58% of the manufacturing byproducts generated at our mills was reused for energy generation and 28.1% was reclaimed for other beneficial reuse applications. Only 13.7% of our solid waste was sent to landfills.
- Nearly 1.4 million pounds of paper were recovered for recycling through the Duluth Mill's magazine collection program, with 6.8 million pounds recovered since its inception in 2008.
- We have the capability to offer FSC®, SFI® and PEFC™ chain-of-custody certified products across all paper and pulp grades and products with 10 to 30 percent recycled fiber content.
- Verso and our employees made financial and in-kind contributions totaling approximately $638,000 to a wide variety of community organizations.
- We purchased goods and services to run our business from more than 2,450 local/regional vendors, spending more than $950 million. In addition, we spent nearly $550 million on local/regional purchases of wood needed to manufacture our products.

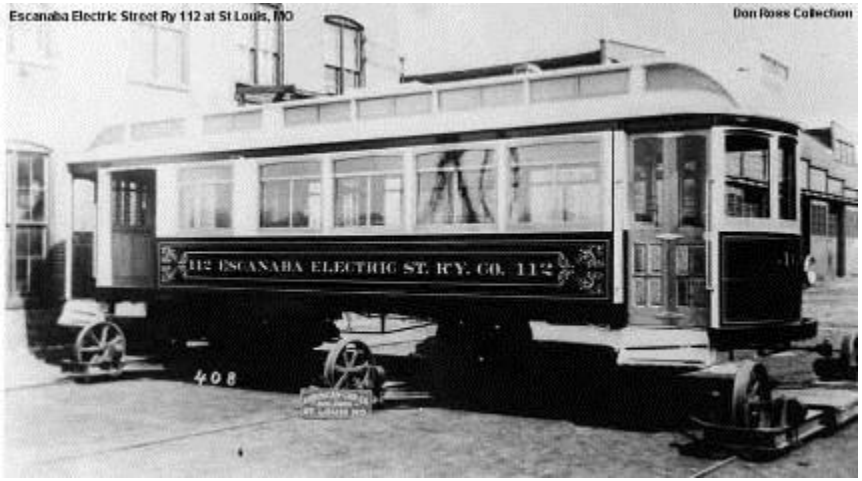
Chain-of-Custody Certifications

- All Verso mills have been independently audited and certified to the Forest Stewardship Council® (FSC®), Programme for the Endorsement of Forest Certification™ (PEFC™), and Sustainable Forestry Initiative® (SFI®) chain-of-custody standards.
- All Verso mills are certified to both FSC Controlled Wood and SFI Fiber Sourcing certification standards.

- Verso offers FSC, PEFC and SFI chain-of-custody certified products across all paper grades, upon request. Our customer have on-product labeling options for all three certifications.

Historical Overview

- 1891 Escanaba Electric Street Railway Company
- 1911 Escanaba Pulp and Paper Company
  - 2 paper machines
  - Groundwood pulp mill
  - 1920 E1 Machine starts up
- 1942 Mead Paper Company
  - 1969 -1972 Expansion 1
    - E3 paper machine
    - Kraft pulp mill
    - No's 7 & 8 turbine generator and PB9 bark boiler
  - 1980 -1982 Expansion 2
    - E4 paper machine
    - RMP pulp mill
    - PB 11 and No. 9 turbine generator.
- 2002 MeadWestvaco
- 2005 NewPage
- 2015 Verso



All as One!

People & Capacity

- Largest employer in Delta County
  - United Steelworkers 664
  - IBEW 41
  - Teamsters 22
  - Salary 140

Local 21

Local 979

Local 486

- Mill Overview:
  - Paper capacity 780,000 TPY or 2,200 TPD
  - Kraft Pulp capacity 405,000 TPY SWD/HWD
  - RMP Pulp capacity 110,000 TPY aspen
  - Fully integrated facility with:
    - 3 paper machine systems
    - 1 pulp dryer
    - 2 pulp mills (Kraft and RMP)
    - Steam & electric generating capability

Safe from the Start

Takes Water to Make Paper

- 38 MGD of process water comes from Little Bay de Noc of Lake Michigan
- Intake line extends 3500’ into Bay
- 4 Bay Water Pumps (3 are 700 HP and 1 is 1500 HP)
- Pumped 6800’ from the Bay Station to the mill
- Water is disinfected and filtered prior to use

Bay Pumping Station


Escanaba WWTP
N
Discharge to River
Tertiary Clarifiers
Settling Basin
Aerated Stabilization Basin
Activated Sludge Treatment
Secondary Clarifiers
WWTP Building
Sludge Dewatering
Thickeners
Primary Clarifiers
0
500
ft

NPDES Permit limits – Main Outfall

PART I

Section A. Effluent Limitations And Monitoring Requirements

1. Final Effluent Limitations, Monitoring Point 001A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge a maximum of 50 MGD of treated process wastewater, sanitary wastewater, landfill leachate, groundwater, noncontact cooling water, contact cooling water, and storm water from Monitoring Point 001A through Outfall 001. Outfall 001 discharges to the Escanaba River. Such discharge shall be limited and monitored by the permittee as specified below.

	Maximum Limits for Quantity or Loading			Maximum Limits for Quality or Concentration			Monitoring	Sample
Parameter	Monthly	Daily	Units	Monthly	Daily	Units	Frequency	Type
Flow	(report)	(report)	MGD	---	---	---	Daily	Report Total Daily Flow
Biochemical Oxygen Demand (BOD_5)								
Oct-May	12,000	19,000	lbs/day	---	---	---	Daily	24-Hr Composite
June	---	11,540	lbs/day	---	---	---	Daily	24-Hr Composite
Jul-Aug	---	8,690	lbs/day	---	---	---	Daily	24-Hr Composite
Sep	9,000	15,000	lbs/day	---	---	---	Daily	24-Hr Composite
Total Suspended Solids								
Oct-Jun	28,000	45,000	lbs/day	---	---	---	Daily	24-Hr Composite
Jul-Sep	24,000	32,000	lbs/day	---	---	---	Daily	24-Hr Composite
Total Phosphorus (as P)	420	---	lbs/day	1.0	---	mg/l	Weekly	24-Hr Composite
Available Cyanide	---	(report)	lbs/day	---	(report)	ug/l	Monthly	Grab
Adsorbable Organic Halides(AOX)	1410	2160	lbs/day	---	---	---	Quarterly	24-Hr Composite
2,3,7,8-TCDD Toxicity Equivalence Concentration ($(TEC)_{TCDD}$) (See Part I.A.1.k.)	---	(report)	lbs/day	---	(report)	ppq	Quarterly	24-Hr Composite
Ammonia (as N)	---	---	---	(report)	(report)	mg/l	2X Monthly	24-Hr Composite
Acute Toxicity	---	---	---	---	(report)	TU_A	Annually	24-Hr Composite
Chronic Toxicity	---	---	---	(report)	---	TU_C	Annually	24-Hr Composite
Operation of Turbines in Dam No. 1 (Jul-Sep)	---	---	---	---	(report)	Y/N	Daily	Report Operation
Flow in Escanaba River at Dam No. 1 (Jul-Sep)	---	---	---	---	(report)	cfs	Daily	Report Daily Flow
Outfall Observation	(report)	---	---	---	---	---	Daily	Visual
Total Mercury	(report)	---	lbs/day	(report)	---	ng/l	Quarterly	Grab
	12-Month Rolling Average			12-Month Rolling Average				
Total Mercury	0.003	---	lbs/day	6.0	---	ng/l	Quarterly	Calculation
				Minimum Daily	Maximum Daily			
pH	---	---	---	6.0	9.0	S.U.	Daily	Grab

NPDES Permit Limits – Sanitary Plant

PART I

Section A. Effluent Limitations And Monitoring Requirements

2. Final Effluent Limitations, Monitoring Point 001B

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge a maximum of 0.4 MGD of sanitary wastewater from Monitoring Point 001B via Monitoring Point 001A through Outfall 001. Outfall 001 discharges to the Escanaba River. Such discharge shall be limited and monitored by the permittee as specified below.

	Maximum Limits for Quantity or Loading			Maximum Limits for Quality or Concentration			Monitoring	Sample
Parameter	Monthly	Daily	Units	Monthly	Daily	Units	Frequency	Type
Flow	(report)	(report)	MGD	---	---	---	2x/Monthly	Report Total Daily Flow
Fecal Coliform Bacteria	---	---	---	200	400	cts/100ml	2x/Monthly	Grab

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, suspended solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

NPDES Permit Limits – Bleach Plant

PART I

Section A. Effluent Limitations And Monitoring Requirements

3. Final Effluent Limitations, Monitoring Point 001C

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge an unspecified amount of bleach plant wastewater from Monitoring Point 001C via Monitoring Point 001A through Outfall 001. Outfall 001 discharges to the Escanaba River. Such discharge shall be limited and monitored by the permittee as specified below.

	Maximum Limits for Quantity or Loading			Maximum Limits for Quality or Concentration			Monitoring	Sample
Parameter	Monthly	Daily	Units	Monthly	Daily	Units	Frequency	Type
Flow	(report)	(report)	MGD	---	---	---	Annually	Report Total Daily Flow
2,3,7,8-TCDD	---	---	---	---	BQL	pg/l	Annually	Grab Composite
2,3,7,8-TCDF	---	---	---	---	BQL	pg/l	Annually	Grab Composite
Trichlorosyringol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
3,4,5-trichlorocatechol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
3,4,6-trichlorocatechol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
3,4,5-trichloroguaiacol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
3,4,6-trichloroguaiacol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
4,5,6-trichloroguaiacol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
2,4,5-trichlorophenol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
2,4,6-trichlorophenol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
Tetrachlorocatechol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
Tetrachloroguaiacol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
2,3,4,6-tetrachlorophenol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
Pentachlorophenol	---	---	---	---	BQL	ug/l	Annually	Grab Composite
Chloroform	9.4	15.7	lbs/day	---	---	---	Annually	3-Portion Composite

BQL - Below the quantification level

Wastewater Treatment Plant (WWTP)

WWTP Staff

- Superintendent of Outside Utilities
  - Process water, potable water, industrial WWTP, & sanitary WWTP
- 4 WWTP Operators
- 4 Assistant WWTP Operators
- 3 Water Monitors
- All WWTP Staff are Industrial Certified Operators
- Maintenance support
- Environmental Dept (4 Engineers) support for operational issues, regulatory obligations, & landfill operations.
  - Wastewater
  - Storm Water
  - Potable Water
  - Solid and Hazardous Waste
  - Air Emissions
  - Recycling

Sanitary WWTP

- Treats sanitary wastewater
- Activated sludge process
- Approximately 170,000 gpd
- Disinfect with chlorine for fecal coliforms
- Discharges to Industrial WWTP

WWTP Goals

1. Remove Solids from the water
   - Total Suspended Solids (TSS)
2. Remove Contaminants from the water
   - Biochemical Oxygen Demand (BOD)
3. Discharge Clean Quality Effluent to the River
4. Safely Handle the Solids that are Generated
5. Do it cost effectively!

2016 Average Statistics

Final Effluent Flow = 35 MGD

1. Remove Solids
   - Influent TSS = 207,000 lbs/day
   - **Final Effluent TSS = 2,970 lbs/day**
   - **TSS Removal Efficiency = 98.6%**
2. Remove Contaminants
   - Influent BOD = 145,000 lbs/day
   - **Final Effluent BOD = 3,550 lbs/day**
   - **BOD Removal Efficiency = 97.6%**
3. **Indicators of a Clean Quality Effluent**

Industrial WWTP Chemicals

- Polymer
- Defoamer
- Ammonia
- Phosphorus
- Specialty Chemicals (ferric sulfate, calcium nitrate, hydrogen peroxide, bleach)
- Spent $2.2 million on WWTP chemicals in 2014

Industrial WWTP Aeration – Lagoon 1

- Lagoon 1 (ASB) – 30 acres
  - 23 surface aerators & directional mixers
  - Total aeration/mixing capacity in Lagoon 1 = 1665 HP

Industrial WWTP Aeration – AST

- Activated Sludge Treatment (AST) – 6 acres
  - 29 surface aerators & directional mixers
  - Total aeration/mixing capacity in AST = 2095 HP

Industrial WWTP Aeration – Cost

- Electrical Cost for Aerators
  - Over $1.5 million per year
  - Does not include maintenance or replacement costs

Industrial WWTP Dewatering

- **Separate the Solids from the Wastewater**
- Screw Press - Primary Dewatering Device
  - Sludge goes across the Gravity Belt Thickener
    - Goes from ~ 4% solids to ~ 14% solids off the GBT
  - Sludge goes through the Screw Press
    - Andritz 55” Screw Press
    - Goes from ~ 14% solids to ~ 42% solids out of the Screw Press
    - Sludge drops into trucks (Avg 26 dump truckloads per day)
    - 330 wet tons per day of biologically processed WWTP residuals or sludge or VersoGrow
    - Over 80% of the sludge (VersoGrow) is beneficially used on farm fields and mine reclamation projects. The remainder is landfilled or burned as fuel in No. 11 Boiler.

Industrial WWTP Dewatering – GBT and Screw Press

Industrial WWTP Dewatering

- Belt Presses - Secondary Dewatering Devices
  - 3 Belt Presses are used when the Screw Press is down or if we have operational issues.

Beneficial Use of VersoGrow

Ensuring High Quality Treatment & Final Effluent

- **Internal Testing to Monitor WWTP Operations**
  - BOD, TSS, Volatile Suspended Solids (VSS), Total Solids, Dissolved Oxygen (DO), pH, temperature, Settleable Solids, SVI, Conductivity, Turbidity, COD, sulfide, ORP, Sludge Age, F/M Ratios, and nutrient residuals
- **Final Effluent Testing to Protect the River, Fish, Aquatic Life, and Meet Permit Limits**
  - BOD, TSS, pH, flow, phosphorus, ammonia, adsorbable organic halides, dioxin, mercury, cyanide, and **whole effluent toxicity (WET)**

WET Testing

- **Acute Toxicity Testing**
  - Measures Short Term Survival Rates
- **Chronic Toxicity Testing**
  - Measures Longer Term Survival and Reproduction Rates

SUMMARY OF DATA*(11)

C. dubia Survival and Reproduction

Concentration of Effluent (%)	0_1**	0_2	6.25%	12.5%	25%	50%	100%
48-hour Survival (%)	100	100	100	100	100	100	100
7-day Mean Reproduction/female	18.3	17.2	21.1	24.3	24.8	24.2	22.7
7-day Mean Survival (%)	100	100	100	100	100	100	100

** Primary Control/Dilution water

Final Outfall

QUESTIONS?