

Enbridge USGC Access Plan: Infrastructure, Commodities & Quality

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March 1 2012

Forward Looking Statements



2012

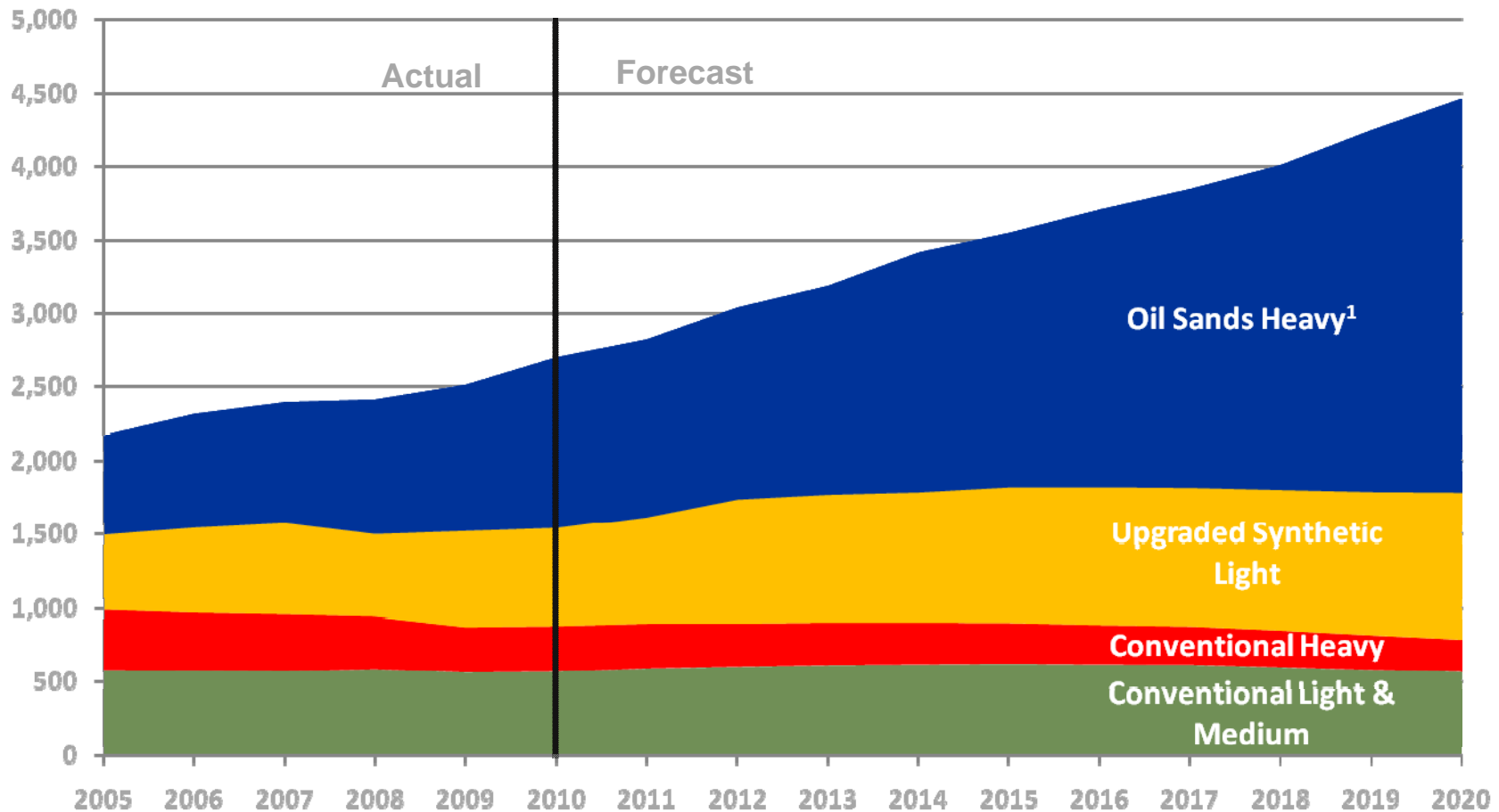
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CAPP 2011 Western Canadian Crude Oil Forecast



2012

Bpd (thousand)

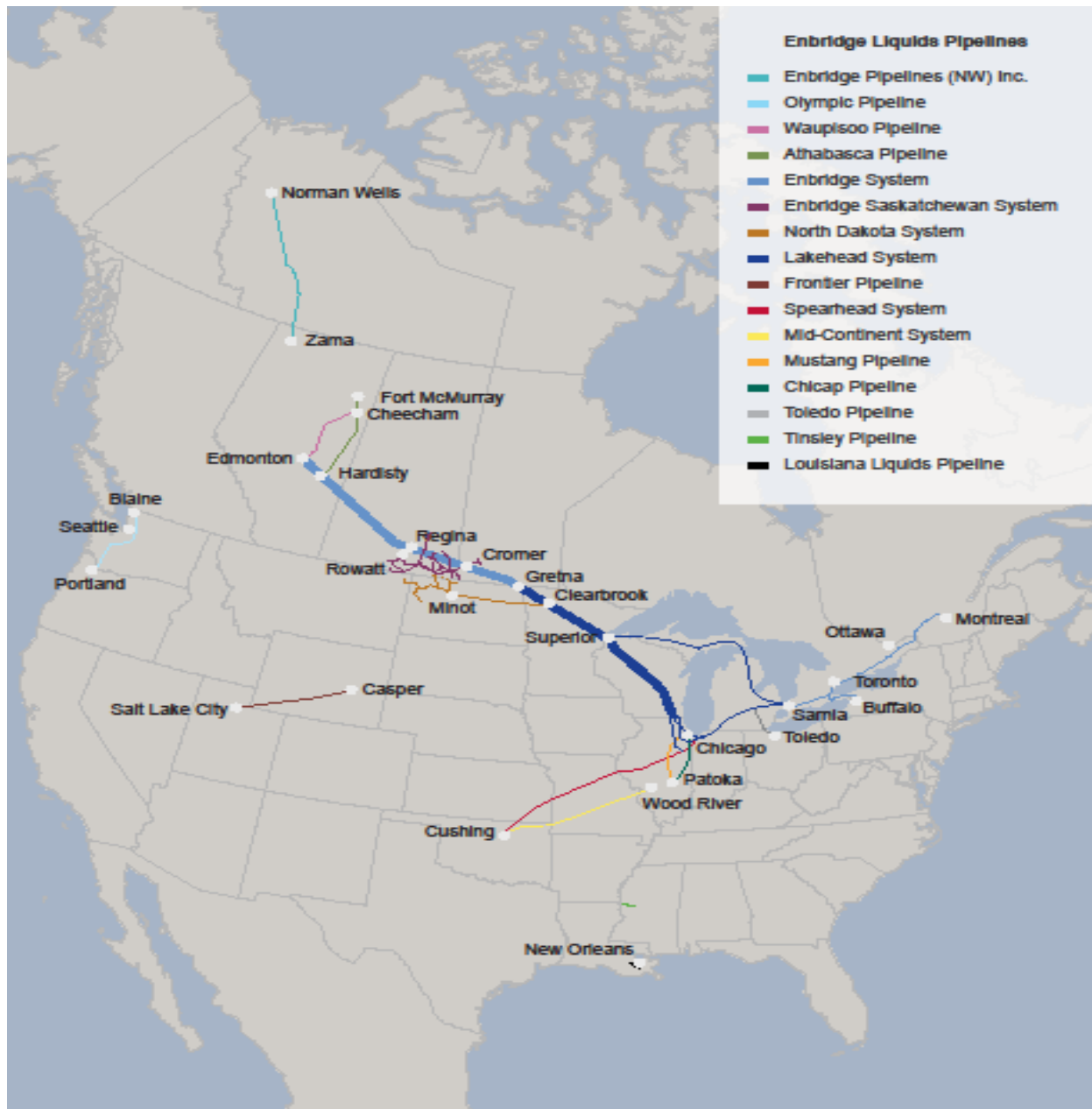


1. Oil Sands Heavy includes some volumes of upgraded heavy sour crude oil and bitumen blended with diluent or upgraded crude oil.

Enbridge Liquids System

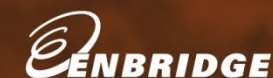


2012



Group	ID	Crude Name	Group	ID	Crude Name
Heavy	AHS	Albian Heavy Synthetic	Heavy Low Resid	AVB	Albian Vacuum Gas Oil Blend
	ARB	Albian Resid Blend		OSH	Suncor – H
	BR	Bow River	Medium	M	Midale Blend
	CL	Cold Lake	High Sour	MJT	Moose Jaw Tops
	F	Fosterton		SHE	Sour Heavy Edmonton
	LLB	Lloydminster Hardisty		SO	Mixed Blend Sour
	LLK	Lloydminster Kerrobert	Light Sour	LSB	Light Sour Blend
	SC	Smiley Coleville Heavy		SLE	Sour Light Edmonton
	WCB	Western Canadian Blend	Sweet	SW	Mixed Blend Sweet
	WCS	Western Canadian Select		UHC	U.S. Sweet
WH	Wabasca Heavy	Light Synthetic	CNS	CNRL Synthetic Blend	
Heavy – High TAN Dil-Bit	AMH		Albian Muskeg River Heavy	HSB	Husky Synthetic Blend
	AWB		Access Heavy Blend	NSA	Newgrade Synthetic Blend
	BHB		Borealis Heavy Blend	OSA	Suncor-A
	CDB		Christina Lake Dil-Bit	OSC	Suncor-C
	PH		Peace Heavy	PAS	Premium Albian Synthetic
	SCB		Statoil Cheecham Blend	PSC	Long Lake Synthetic Blend
	SH		Seal Heavy	SPX	Shell Synthetic
Heavy – High TAN Syn-bit	CSB		Christina Lake Syn-Bit	SSX	Shell Synthetic Light
	MKH		MacKay River Heavy	SYN	Syncrude
	PSH	Long Lake Heavy Blend	Condensate	CRW	Condensate Blend
	SHB	Surmont Heavy Blend		OSN	Suncor - N
Cracked Crude	OCC	Suncor Cracked C	Caroline Condensate	CCA	Caroline Condensate
	OSJ	Suncor - J	Sarnia Special	SSS	Sarnia Special Blend
	OSS	Suncor – S			
	PBS	Pine Bend Special			

Enbridge Commodity Typical Characteristics



2012

	API	%S	MCR	TAN
Heavy	19-21	2.6-4.5	8.5-13.0	0.3-1.1
Heavy Hi Tan	19-21	3.6-5.2	8.8-10.7	1.4-3.5
Heavy Lo Resid	20	3.0	<1.0	3.5
Medium	30-35	2.3	5.1	0.2
Sour	30-35	1.1-1.8	4.0-6.0	0.3
Sweet	40	<0.5	2.0	0.3
Lt Sweet Synthetic	30-35	0.1-0.25	<0.5	0.1
Condensate	60	0.2	-	-
Olefinic				
NGL				
Refined Products				

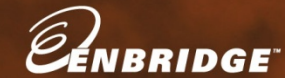
Quality Management in Enbridge Batched Pipeline



2012

- **Enbridge controls quality of delivered crude in the following ways.**
 - **In the Pipe:** Manage Interface - number, type, size, cut
 - Line Splits: Like Commodities in segregated lines
 - Line Rates: Turbulent flow to minimize interface sizes
 - Batch Pigs: Inserted for laminar flow lines
 - Batch Sizes: Minimum 60KB, Multiples batch trains
 - Batch Sequence; Based on least contamination risk
 - Batch Cuts (Interfaces): Mid point
 - **In the Tank**
 - Tank Bottoms Crossing
 - Tank Selection/Terminal Piping/Service Change

NYMEX Testing Guidelines



2012

Current WTI Spec Testing Requirements

<http://www.cmegroup.com/rulebook/NYMEX/2/200.pdf>

Test	Specs	Test Method
Sulfur	0.42wt% or less	ASTM D4294 or latest revision
Gravity	37 API to 42 API	ASTM D287 or latest revision
Viscosity	Maximum 60 SUS @ 100F	ASTM D445 and as calculated for Saybolt Seconds ASTM D2161
Reid Vapor Pressure	9.5psi or less @ 100F	ASTM D 5191-96 or latest revision
Basic Sediment, water and other impurities	Less than 1%	ASTM D-96-88 or D-4007, or their latest revisions;
Pour Point	Not to exceed 50°F	ASTM D-97, or latest revision

NYMEX Testing Guidelines



2012

Proposed Additional WTI Spec Testing Currently monitored by Enbridge

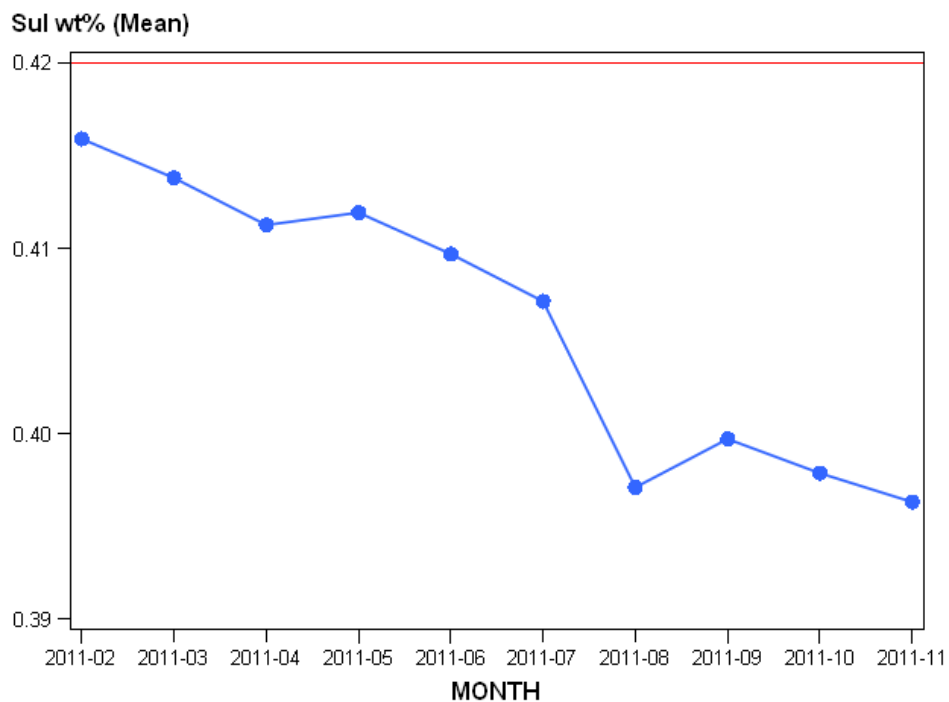
Test	Specs	Test Method
Micro Method Carbon Residue (MCR)	2.40% or less by mass	ASTM D4530-07, or its latest revision
Total Acid Number (TAN)	0.28 mg KOH/g or less	as determined by the first inflection point; using ASTM D664-09a, or its latest revision
Nickel	8 parts per million (ppm) or less by mass	ASTM D5708-05, Test Method B, or its latest revision
Vanadium	15 parts per million (ppm) or less by mass	ASTM D5708-05, Test Method B, or its latest revision
Light Ends <220°F by HTSD	Not more than 19 % by mass	ASTM D7169-05, or its latest revision
50 % Point by HTSD	470°F- 570°F	ASTM D7169-05, or its latest revision
Vacuum Residuum >1020°F by HTSD	Not more than 16 % by mass	ASTM D7169-05, or its latest revision

NYMEX Testing Results

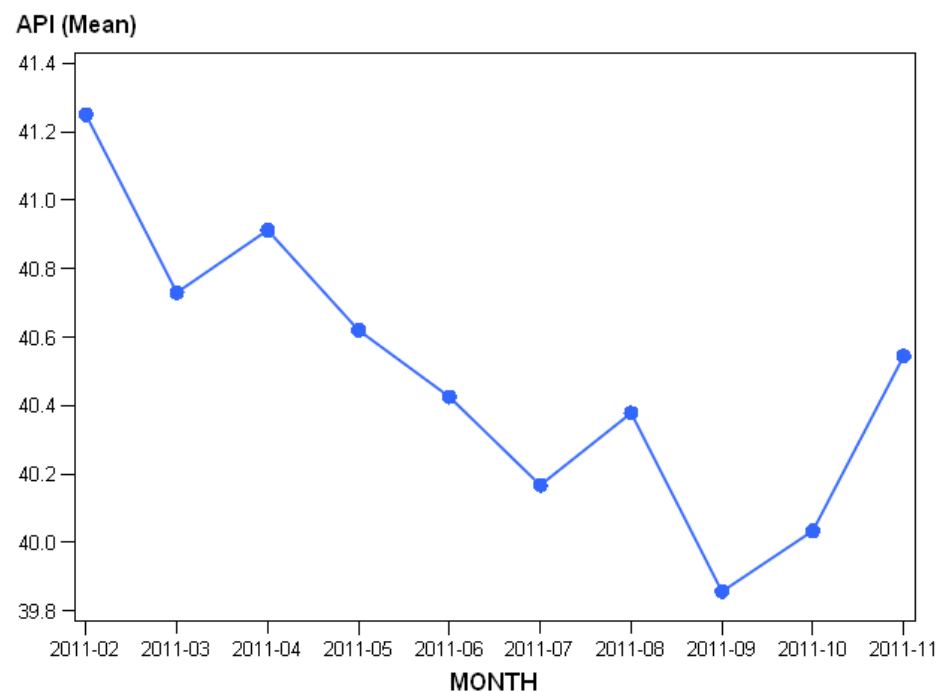


2012

Sulfur Monthly Average Results
(Max 0.42 wt%)



API Monthly Average Results
(Acceptable limit 37 to 42 API)

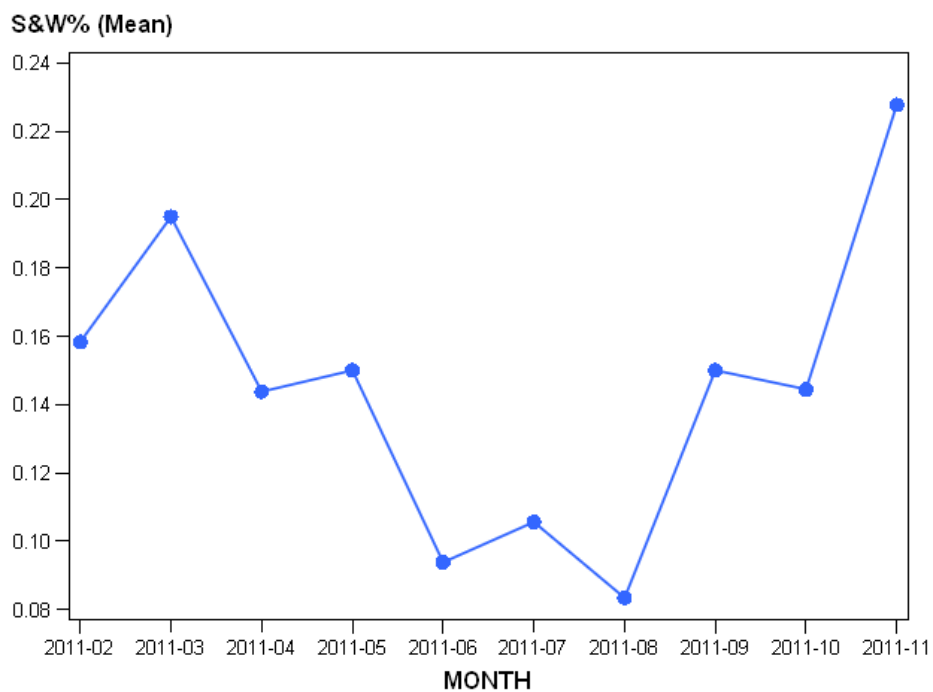


NYMEX Testing Results

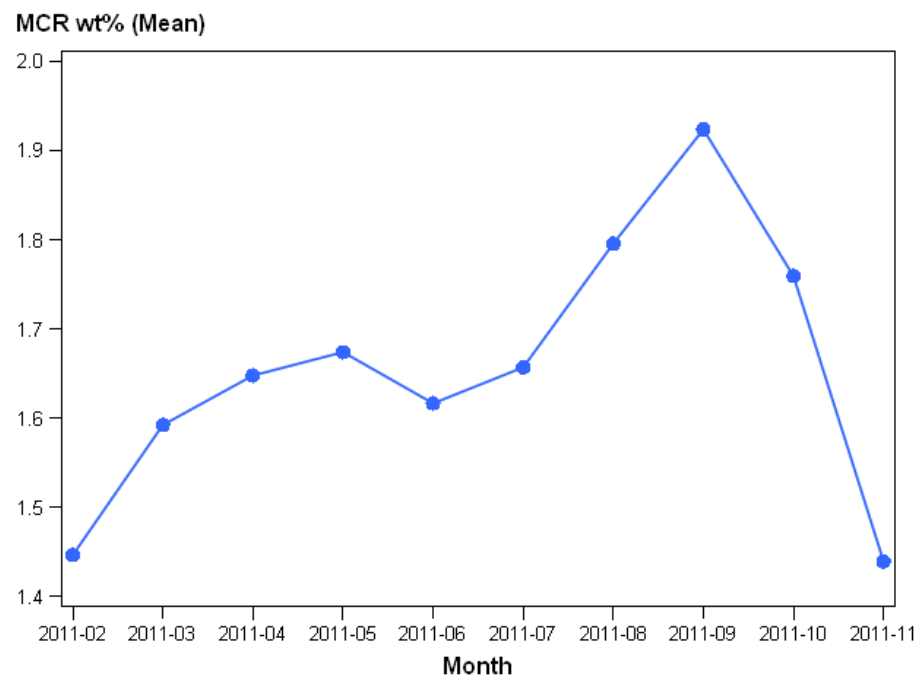


2012

S&W% Monthly Average Results
(Less than 1.0%)



MCR Monthly Average Results
(Max 2.40 wt%)

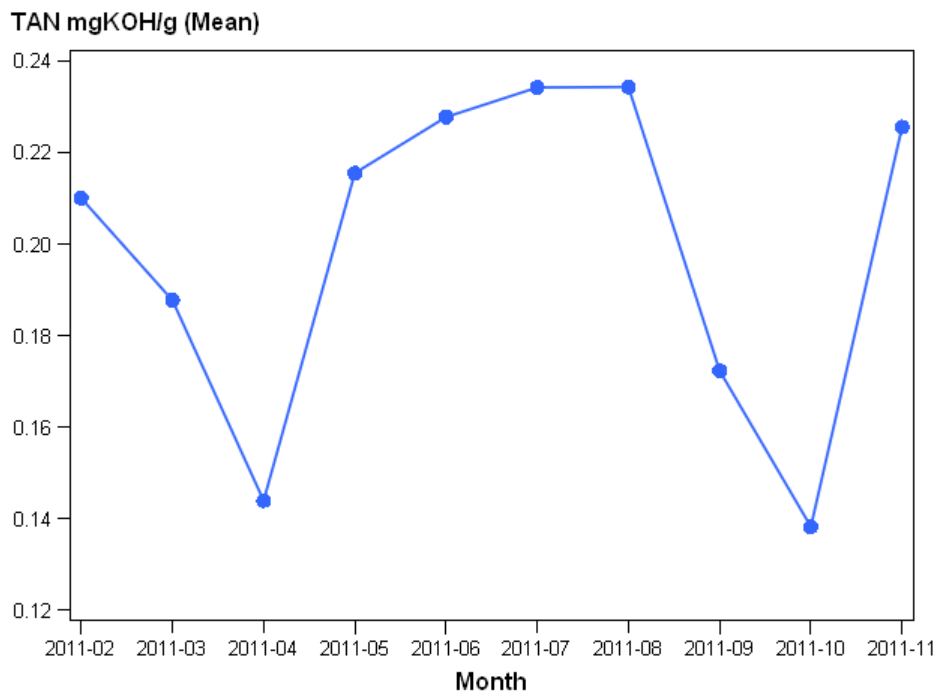


NYMEX Testing Results

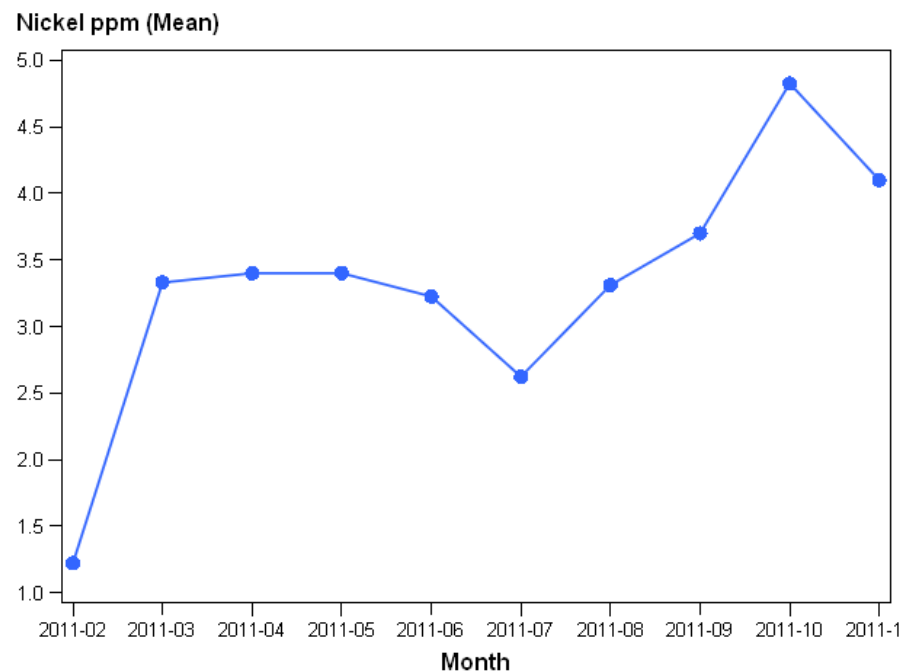


2012

Tan Monthly Average Results
(Max 0.28 mg KOH/g)



Nickel Monthly Average Results
(Max 8 ppm)

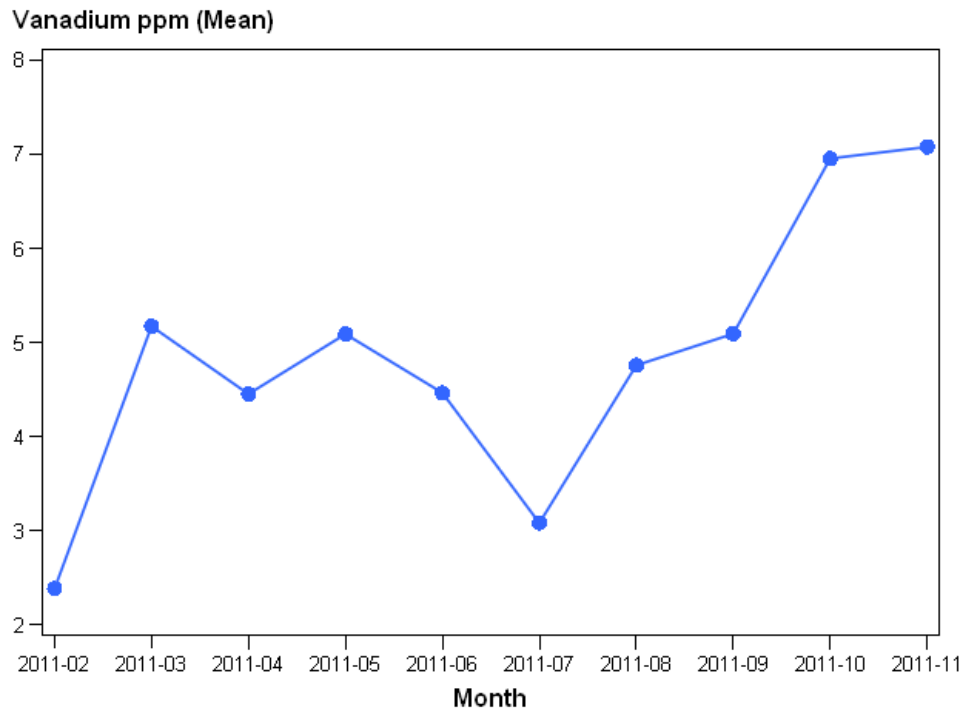


NYMEX Testing Results

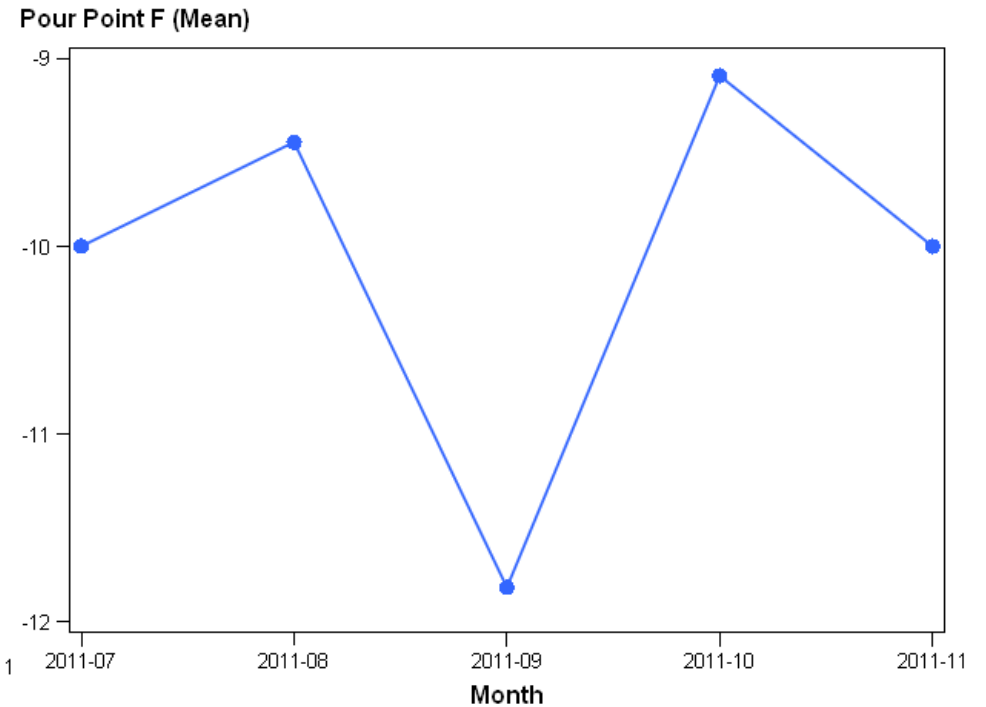


2012

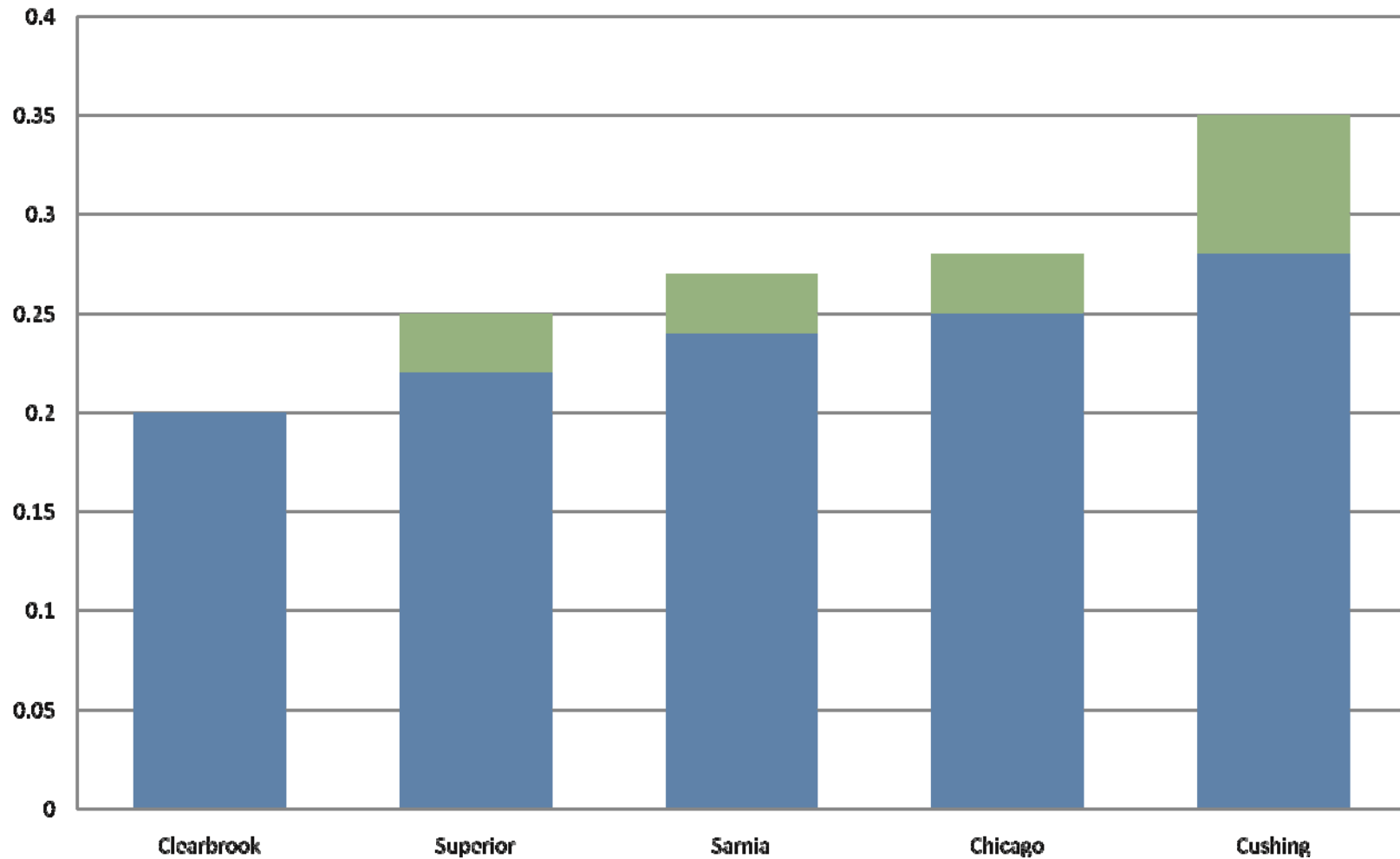
*Vanadium Monthly Average Results
(Max 15 ppm)*



*Pour Point Monthly Average Results
(Max 50F)*



UHC Delivered Sulfur Range



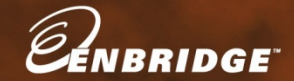
Seaway Pipeline Project



2012



Flanagan South Project



2012



- Enbridge petroleum quality management program will be extended to USGC movements to deliver quality products