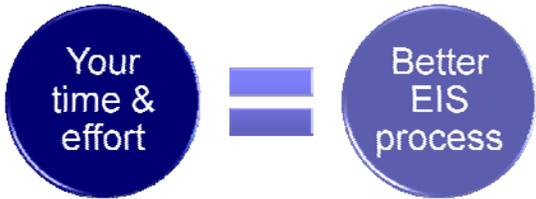




PAC Meeting 1

Zavoral Mine & Reclamation
Project EIS

Thank you for being involved



Agenda

- Introductions
- Review PAC roles, responsibilities, & schedule
- Overview of EIS, CUP, permitting processes
- Gravel mining
- Tiller proposal
- EIS content
- Recent developments & scoping implications
- Group identification of issues & concerns
- Next steps
- Public questions



PAC Members

- Introductions
- Brief summary of what made you interested in serving on PAC?

City & Local Representatives

- **Jed Chestnut**
- **Bill Clapp**
- **Lisa Schlingerman**
- **Kristin Tuenge**
- **Michael White**
- **Thomas Krinke** - Scandia Planning Commission

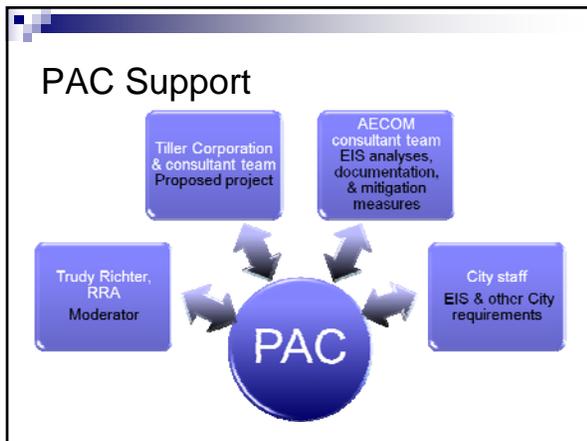
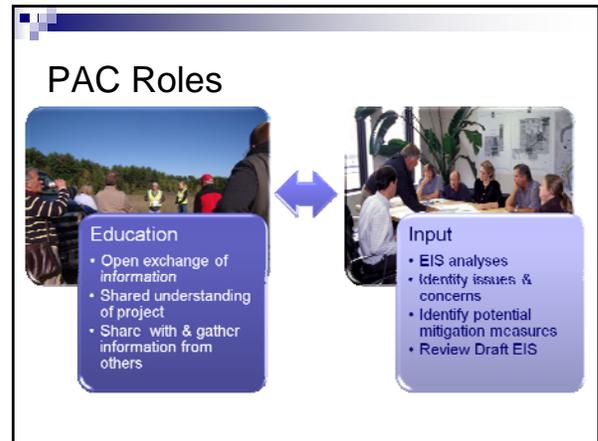
(continued)

Agency Representatives

- **Jim Shaver** - Carnelian-Marine-St. Croix Watershed District
- **Jim Larsen** - Metropolitan Council
- **Melissa Doperalski** - MN Department of Natural Resources
- **Karen Kromar** - Minnesota Pollution Control Agency
- **Jill Medland** - NPS-St. Croix National Scenic Riverway
- **Jyneen Thatcher** - Washington Conservation District
- **Dan Seemon** - US Army Corps of Engineers



PAC Roles & Responsibilities



- ### PAC Input
- Input & results of PAC discussions will be collected & documented in meeting notes & posted on City's project web site
 - PAC members are encouraged to communicate with others in community/agency to broaden outreach & information exchange for EIS

- ### PAC Responsibilities
- Timely review of materials
 - Participation in all meetings
 - Representation of community &/or agency as a whole
 - Providing non-voting, advisory input to City Council

- ### PAC Meetings
- 4 meetings (Feb 3, Apr 27, May/June)
 - 4-6 pm
 - Next 2 meetings
 - Focus on technical issues as information is developed during preparation of EIS & potential mitigation measures
 - 4th meeting
 - Review & comment on the draft EIS

PAC Protocol

- Meetings are for PAC to receive information, ask questions, & discuss issues
- Questions from public allowed at end of meeting; comment cards are available
- If meeting extends beyond scheduled ending time, will continue only if majority of PAC members can remain

(continued)

PAC Protocol

- All members need to have in front of them any information a PAC member refers to during a meeting. (If you have something you intend to refer to, please bring copies for each member)
- Anne Hurlburt is the point of contact for information sharing between meetings

(continued)

PAC Protocol

- PAC meeting notes comprise written documentation of PAC's advisory role
- PAC members are likely to comment on EIS when published as individuals/or as agencies



Overview of Processes

Environmental Review (EIS),
CUP, & other permits

Environmental Review Process

- EQB Rules required EAW for project to determine whether or not it had potential for significant environmental impacts, which would require an EIS
- EAW completed (Dec 2008)
- City Council determined EIS required (Mar 2009)

(continued)

Environmental Review Process

- City held public meeting to "scope" EIS (April 7, 2009) & approved a Scoping Decision Document (April 21, 2009), which determined required contents of EIS
- City is preparing EIS, approved contract with AECOM (August 2009)
- EIS process will take about 1 year

Environmental Impact Statement

Purposes:

- Provide information to evaluate proposed projects with potential for significant environmental effects
- Consider alternatives
- Explore methods to reduce adverse environmental effects (mitigation measures)

Minnesota Rules 4410.2000

EIS Analyses

City & AECOM collect data & conduct analyses required by Scoping Decision Document to complete the EIS. Next two PAC meetings will revolve around these analyses.

Draft EIS Preparation

City & AECOM prepare the draft EIS. PAC will provide review comments on the draft EIS at the 4th PAC meeting, prior to public distribution.

Document Preparation Complete

Draft EIS is completed for public notice.

(continued)

Notification in the EQB Monitor

City provides necessary information to publish notice of draft EIS in EQB Monitor, newspaper.

Public Comment Period Begins

When EQB Monitor is published officially noticing availability of the draft EIS, public comment period (typically 30 days) begins. During this time interested parties can review EIS & submit written comments to City.

Public Meeting

Public Comment Period Ends, City Reviews Comments

When public comment period is over, City & AECOM review all timely & substantive comments. The City & AECOM respond to substantive comments.

(continued)

City & AECOM Prepare Final EIS Document

City & AECOM respond to comments, obtain any required additional information, & prepare final EIS document.

City Distributes Final EIS

City shall provide copies of the final EIS to all persons receiving copies of the draft EIS & any person who submitted substantive comments on the draft EIS; and to the extent possible, to any person requesting the final EIS.

City Notices Final EIS Availability

City sends notice to EQB Monitor & newspaper of availability. Comment period on Final Decision & Response to Comments ends no sooner than 10 business days after publication of notice.

(continued)

City makes EIS Adequacy Decision - an EIS is adequate if:

Addresses potentially significant issues raised in scoping, provides responses to substantive comments received during draft EIS review concerning issues raised in scoping, was prepared in compliance with procedures of the act and parts 4410.0200 to 4410.6500.

City Notification of Final Decision

City will notify all persons receiving copies of the final EIS pursuant of its adequacy decision within five days. Public notice of the decision shall be published in the EQB Monitor.

Conditional Use Permit

- Separate process
- Tiller submitted CUP application (Nov 2008) per City Ordinance No. 103 & Chapter 4 of the Development Code: Mining & Related Activities Regulations adopted by City in August 2007
- Review of CUP application is suspended until EIS process has been completed

Other Permits

- EIS is not a generic permit application, it does not replace permit applications or supporting data requirements
- Tiller will need to file any necessary permit information directly with permitting agencies
- City & other permitting entities may not issue permits for project until EIS has been completed



Gravel Mining 101

(By Tiller Corp.)

Gravel Mining 101

Production of Construction Aggregates

Raw material to finished products



Every year— 42,719 pounds of new minerals must be provided for every person in the United States to make the things we use, every day

9,871 lbs. Stone used to make roads; buildings; bridges; landscaping; numerous chemical and construction uses	15 lbs. Copper used in buildings; electrical & electronic parts; plumbing; transportation
7,811 lbs. Sand & Gravel used to make concrete; asphalt; roads; blocks & bricks	12 lbs. Lead 75% used for transportation— batteries; electrical; communications; TV screens
714 lbs. Cement used to make roads; sidewalks; bridges; buildings; schools; houses	7 lbs. Zinc used to make metals rust resistant; various metals & alloys; paint; rubber; skin creams; health care; and medicine
377 lbs. Iron Ore used to make steel— buildings; cars; trucks; planes; & trains; other construction; containers	44 lbs. Soda Ash used to make all kinds of glass; in powdered detergents; medicines; as a food additive; photography; water treatment.
400 lbs. Salt used in various chemicals; highway deicing; food & agriculture	7 lbs. Manganese used to make almost all steels for construction; machinery; transportation
247 lbs. Phosphate Rock used to make fertilizers to grow food; animal feed supplements	544 lbs. Other Nonmetals numerous uses glass; chemicals; soaps; paper; computers; cell phones; etc.
204 lbs. Clays used to make floor & wall tile; dinnerware; kitty litter; bricks & cement; paper	26 lbs. Other Metals numerous uses same as nonmetals, but also electronics; TV & video equipment; recreation equipment; etc.
84 lbs. Aluminum (Bauxite) used to make buildings; beverage containers; autos; airplanes	

Plus These Energy Fuels

- 979 gallons of Petroleum - 7,378 lbs. of Coal - 70,473 cu. ft. of Natural Gas - 1/4 lb. of Uranium

To generate the energy each person uses in one year— equivalent to 300 people working around the clock for each of us.



© 2006, Mineral Information Institute, S&P Foundation

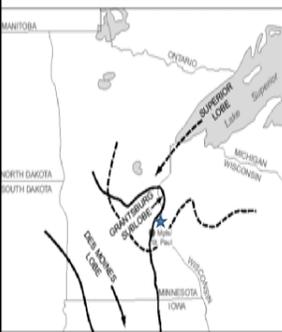


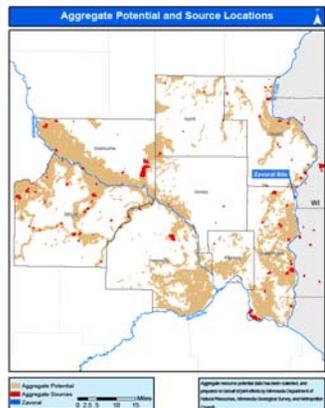
Figure 5. Map of Minnesota showing movement direction and maximum extent of Superior-lobe ice, and the later Des Moines-lobe ice. Note the northeast-directed Grantsburg sublobe of the Des Moines lobe.

(Southwick et al., 2000)

"The Superior-lobe gravels contain abundant particles of strong, non-reactive crystalline rock, and only minor amounts of undesirable rock types such as shale or sulfide-bearing slate."

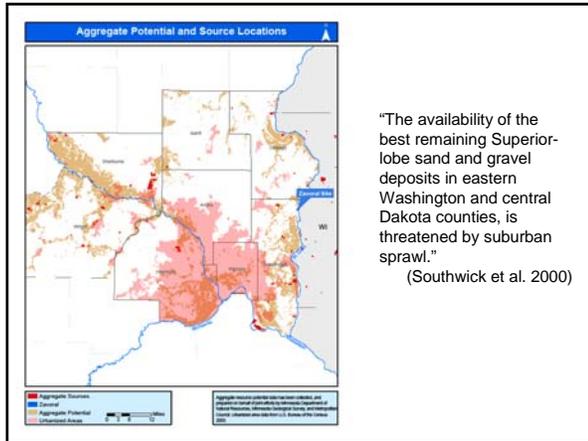
"Sand and gravel deposits laid down by meltwater from the Des Moines lobe contain particles of shale, and are therefore of lower quality as construction aggregate."

Aggregate Potential and Source Locations

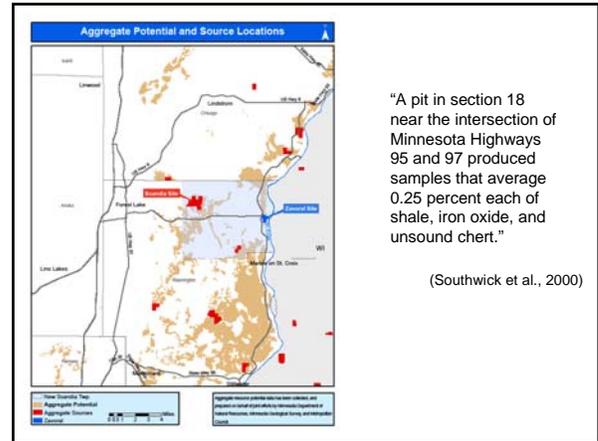


"Economically viable deposits of sand and gravel, or bedrock appropriate for crushing, are where they are, whether convenient or not."

(Southwick et al., 2000)



"The availability of the best remaining Superior-lobe sand and gravel deposits in eastern Washington and central Dakota counties, is threatened by suburban sprawl."
(Southwick et al. 2000)



"A pit in section 18 near the intersection of Minnesota Highways 95 and 97 produced samples that average 0.25 percent each of shale, iron oxide, and unsound chert."
(Southwick et al., 2000)



Exposed mining face

- Demonstrates the unconsolidated nature of glacial deposits
- Note the range of grain sizes:
Fine-grained sand—coarse-grained gravel
- A mining site that is lacking a particular grain size may need to bring in "add rock" to supplement the specifications for different products

Grain Size Distribution and Classification Chart

Millimeters (mm)	Micrometers (µm)	Phi (φ)	Wentworth size class	
4096		-12.0	Boulder	
296		-8.0	Cobble	
64		-6.0	Pebble	
4		-2.0	Gravel	
2.00		-1.0	Very coarse sand	
1.00		0.0		
1/2	0.50	500	1.0	Sand
1/4	0.25	250	2.0	
1/8	0.125	125	3.0	Fine sand
1/16	0.0625	63	4.0	
1/32	0.031	31	5.0	Coarse silt
1/64	0.0156	15.6	6.0	
1/128	0.0078	7.8	7.0	Medium silt
1/256	0.0039	3.9	8.0	
	0.0006	0.06	14.0	Fine silt
				Clay
				Mud

- To make a product, material must be sorted according to its grain size
- Material is passed through sieves (screens) to achieve the required grain size distribution for a specific product

- CONSTRUCTION AGGREGATE SPECIFICATIONS
Example of variety of products
- Bagged Portland Cement
 - Fine Aggregate for Portland Cement (**must be washed**)
 - Fine Aggregate for Bituminous Seal Coat
 - Coarse Aggregate for Concrete
 - Mortar Sand
 - Base and Surfacing Aggregate (**Crushing required for Class 5 and Class 6**)
 - Stabilizing Aggregate
 - Aggregate Backfill
 - Aggregate Bedding
 - Coarse Filter Aggregate (**no fines – Generally requires washing**)
 - Fine Filter Aggregate

Table 3138-1
Base Surfacing Aggregate
Total Percent Passing

Sieve Size	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
75 mm (3 inches)	--	--	--	--	--	--
50 mm (2 inches)	--	--	100	100	--	--
37.5 mm (1½ inches)	--	--	--	--	--	--
25.0 mm (1 inch)	--	--	--	--	100	100
19.0 mm (¾ inch)	100	100	--	--	90-100	90-100
9.5 mm (3/8 inch)	65-95	65-90	--	--	50-90	50-85
4.75 mm (# 4)	40-85	35-70	35-100	35-100	35-80	35-70
2.00 mm (# 10)	25-70	25-45	20-100	20-100	20-650	20-55
425 µm (# 40)	10-45	12-30	5-50	5-35	10-35	10-30
75 µm (# 200)	8.0-15.0	5.0-13.0	5.0-10.0	4.0-10.0	3.0-10.0	3.0-7.0

*Modified from Table 3138-1 of the Standard Specifications For Construction, 2005 Edition; Minnesota Department of Transportation.



Comparative Local Water Usage

	Permitted MG/Year
Abrahamson Nurseries	7.3
Barton Sand and Gravel	18.0
Eco Bakken	38.0
Forest Hills Golf Club	37.0
City of Forest Lake	2850

Add Rock= The Modern Plan

- ❑ Add Rock allows gravel mining to operate efficiently.
- ❑ Add Rock does not extend the life of a mining operation, instead, it allows the producers to use 100% of the material to make a product---ALL of the resource is utilized.
- ❑ The amount of Add Rock required is a function of gradations existing at the mine, and the material specification required for specific products.
- ❑ Aggregate is too precious a resource to let go to waste.



Tiller's Mining Proposal

- Operate sand & gravel mine on site of dormant, unreclaimed gravel mine
- Mining & restoration of 64 acres within 114-acre Zavoral Site
- Mine to average depth of 15 feet & expand limits of past mining by 8 acres

(continued)

Tiller's Mining Proposal

- Maintain minimum 3-foot separation between bottom of excavation & groundwater table
- Mining area & processing activities located outside St. Croix River District Zone.
- About 4 acres of previously-mined area in St. Croix River District Zone & scenic easement area reclaimed in first year

(continued)

Tiller's Mining Proposal

- Mining conducted on seasonal basis, typically from April through mid-November
- Develop & reclaim site in phases
- Duration of mining up to 10 years



EIS Content

Scoping Decision Document

Project Alternatives

- Applicant's preferred alternative
- No-build alternative

Scale of Magnitude Alternatives

- 3 washing alternatives (based on water use)
- Impacts & seasonal scheduling of processing

EAW Items Screened & Removed from Further Review

- *Item 15: Water surface use - impacts to boating & recreational use*
- *Item 18: Water quality: wastewaters - impacts to municipal or on-site sewage treatment systems*
- *Item 22: Vehicle-related air emissions*
- *Item 25a: Archaeological, historical, or architectural resources*
- *Item 25b: Prime or unique farmlands*
- *Item 28: Impact on infrastructure & public services*

Topics to be included in EIS:

- *Item 9: Land use/potential environmental hazards/reclamation plan*
- *Item 10: Cover types*
- *Item 11: a - Fish, wildlife, & ecologically-sensitive resources & b - Threatened & endangered species*
- *Item 12: Physical impacts on water resources*
- *Item 13: Water use*
- *Item 14: Water-related land use management districts*
- *Item 16: Erosion & sedimentation*

(continued)

Topics to be included in EIS:

- *Item 17: Surface water quality & quantity*
- *Item 19: Geologic hazards & soil conditions*
- *Item 20: b - Solid waste & c - Hazardous waste, storage tanks*
- *Item 21: Traffic*
- *Item 23: Stationary source air emissions*
- *Item 24: Odors, noise, & dust*
- *Item 26: Visual Impacts*
- *Item 27: Compatibility with plans & land use regulations*
- *Item 29: Cumulative impacts*



Recent Developments

No processing at Zavoral site

Tiller's Revised Proposal

- Cost-benefit related
- Recent additional characterization of deposit indicated use as add-rock for Scandia Mine site
- Reinitiating use of Zavoral site well at levels suitable for washing gravel would require significant investment to address DNR water appropriation requirements

(continued)

Tiller's Revised Proposal

- No washing, processing, or stockpiling at Zavoral site
- Load aggregate into trucks & haul to Scandia Mine site for processing
- Reduces impacts at Zavoral site
- Add-rock is currently brought to Scandia Mine site from other locations

(continued)

Tiller's Revised Proposal

- Dec 1, 2009 -Tiller proposes changes to project
- Changes will:
 - Affect EIS alternatives & analyses
 - Require changes in Scoping Decision Document & AECOM's EIS work plan

(continued)

Tiller's Revised Proposal

- Eliminate on-site processing activities originally proposed for Zavoral site
- Transport aggregate mined at Zavoral site to Tiller's Scandia Mine site for processing
- Tiller indicates material transported will replace aggregate material currently transported to Scandia Mine site from deposits in Chisago County, MN & Polk County, WI

Revised EIS scope & work plan

City staff contacted EQB & reviewed state's rules regarding EIS process to amending scope of the EIS

(Minnesota Rules 4410.200 § 8)

Amend EIS Scope

- Revisit EIS scope to reflect revised Tiller proposal
- Conduct formal scope amendment process
- Notice in EQB monitor
- EQB provided guidance that EIS consider potential impacts at Zavoral & Scandia Mine sites

Alternatives

- #1 – Applicant's Preferred Alternative (10 years or less)
- #2 – No Build Alternative
- #3 – Reduced mining timeframe (5 years or less)
- Deleted: Impacts of Washing Scenarios
- Deleted: Impacts of Seasonal Scheduling of Processing Activities

EIS scoping items to be modified

- Project description modifications - add-rock & timeframe
- Item 13 – Water Use
- Item 17 – Surface Water Quality & Quantity
- Item 21 – Traffic
- Item 23 – Stationary Source Air Emissions
- Item 24 – Odors, Noise, & Dust
- Item 26 – Visual Impacts

Water Use

- Zavoral Site
 - Water use for dust control only-low usage
 - Reduces water use from up to 1,200 gpm (864,000 gpd) to < 10,000 gpd & <1mg
 - No water appropriation permit required
 - Comparison nursery is permitted to use up to 7.2 mg (420 gpm)
 - Potential impacts & mitigation measures of lower usage rate will be addressed in EIS

(continued)

Water Use

- Scandia site
 - Currently permitted 18 mg for washing, 2 mg for dust control
 - Actual usage < 2 mg
 - Add-rock is currently processed at Scandia Mine site
 - The EIS will identify & evaluate potential additional impacts on water use at Scandia Mine site

(continued)

Water Use Monitoring

- Impacts of current water appropriation levels at Scandia Mine site were addressed in Scandia EAW & as part of DNR water appropriation permit process
- Annual water use at Scandia is reported to DNR
 - Dust control (daily)
 - Hours operating washing plant & amount of water used (daily)
 - Zavoral annual water use reported to City as part of Annual Operating Permit

Surface Water Quality & Quantity

- Review historic operational data for Scandia Mine site
- Identify if potential for additional impacts at Scandia Mine site, including areas of disturbance impacts to downstream water resources
- Evaluate any identified impacts & identify mitigation measures

Traffic

- Review historic operational data for Scandia Mine site
- Identify if potential for additional impacts at Scandia Mine site (traffic, safety, & infrastructure)
- Evaluate any identified impacts & identify mitigation measures

Stationary Source Air Emissions

- Identify & evaluate potential for additional air impacts at Scandia Mine site & mining only impacts at Zavoral site.
- Identify mitigation measures

Odors, Noise & Dust

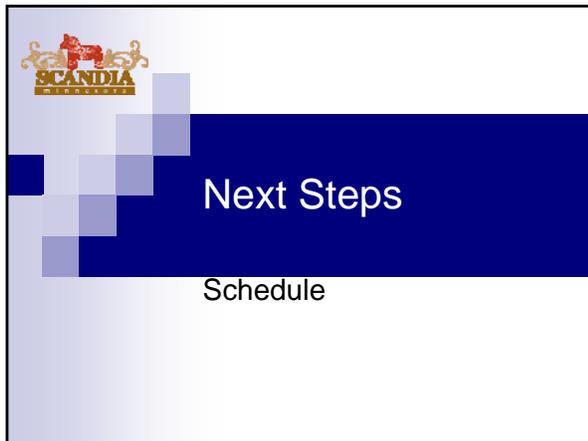
- Identify & evaluate potential noise & dust impacts of mining only at Zavoral site & processing material from Zavoral at Scandia Mine site
- Identify mitigation measures

Visual

- Identify & evaluate visual impacts of mining only at the Zavoral site & processing material from Zavoral at Scandia Mine site
- Identify mitigation measures



Group Identification of Issues & Concerns



EIS Schedule

March 23, 2009	Record of Decision & Positive Declaration for EIS published in EQB Monitor
April 7, 2009	Public Scoping Meeting
April 21, 2009	Final Scoping Decision
December 2009	Revise Scoping Decision Document
Jan-May 2010	Draft EIS preparation
Feb 3 & Apr 27 2010	PAC Meetings
May-June 2010 (TBD)	PAC Meeting - comments on draft EIS
June-July 2010	Draft EIS Comment Period & Public Meeting
July-Aug 2010	Final EIS Preparation
Sept 2010	Final EIS Adequacy Determination

