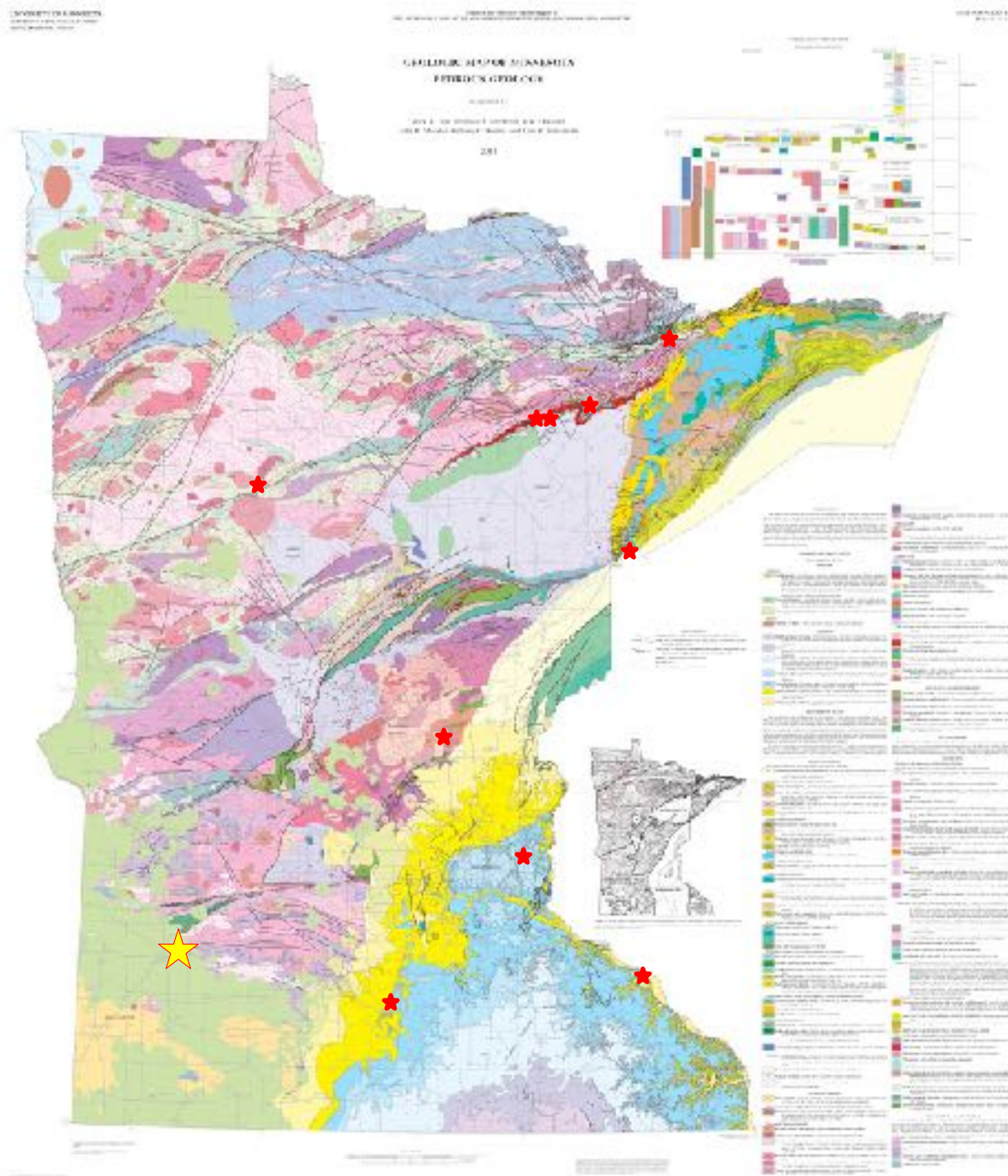


MARSHALL 2014

17th Annual Minnesota Minerals Education Workshop

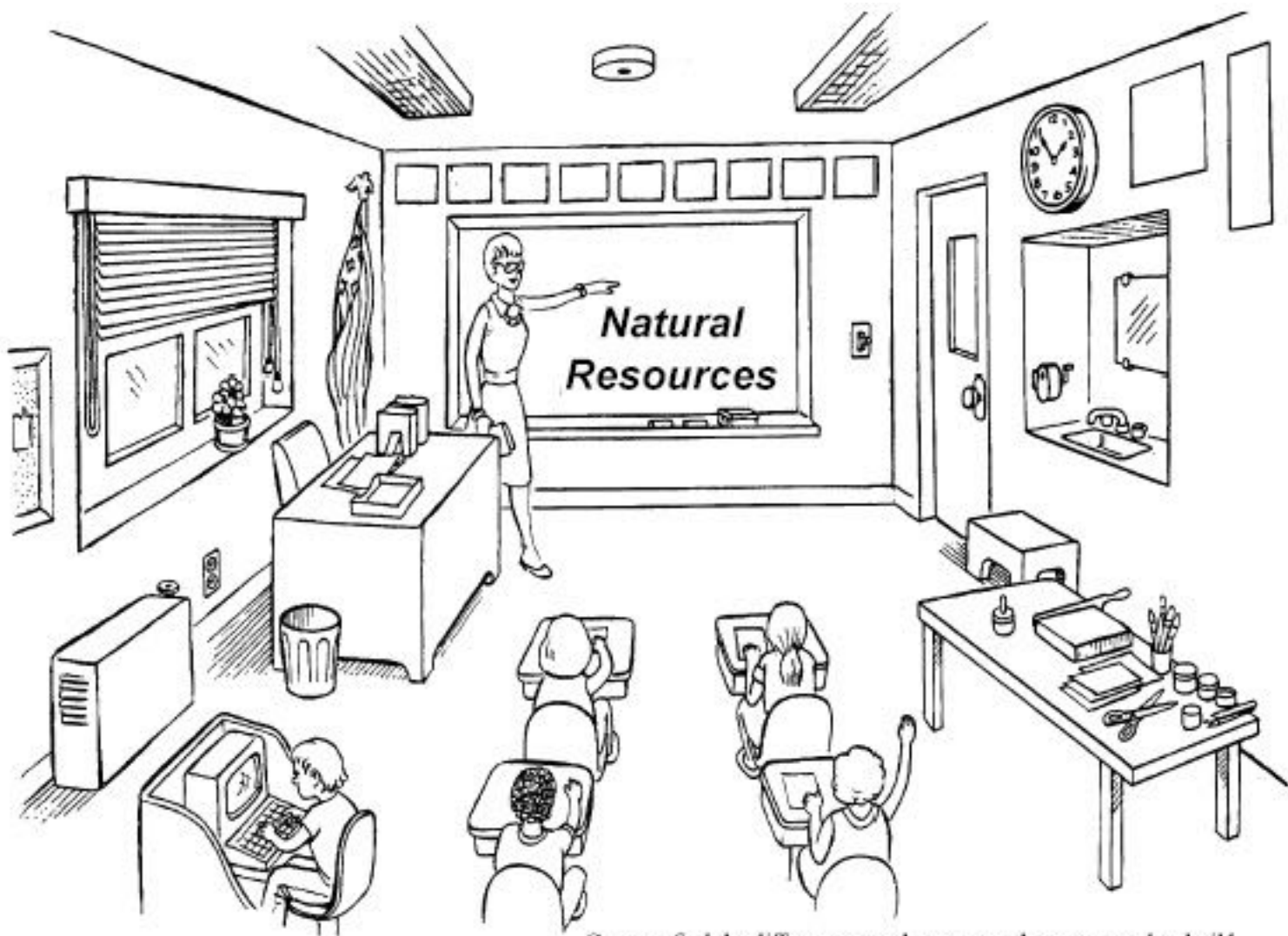


June 17-19, 2014
Southwest Minnesota State University
Marshall, Minnesota



Geology of Minnesota

MGS State Map S-21
Jirsa et al. (2011)



Can you find the different natural resources that were used to build your classroom? Remember, if it wasn't grown, it had to be mined.

17 Years of

MMEW

- 1997 – Ironworld Discovery Center, Chisholm (47)
- 1998 – Minnesota State University, Mankato (65)
- 1999 – University of Minnesota, Duluth (83)
- 2000 – St. Cloud State University, St. Cloud (80)
- 2001 – Mesabi Range Technical College, Virginia
- 2002 – University of St. Thomas, St. Paul (66)
- 2003 – Hibbing Community College, Hibbing (52)
- 2004 – Winona State University, Winona (62)
- 2005 – Minnesota State University, Mankato (69)
- 2006 – University of Minnesota, Duluth (81)
- 2007 – Bemidji State University, Bemidji (47)
- 2008 – Vermilion Community College, Ely (64)
- 2010 – Macalester College, St. Paul (64)
- 2011 – Mesabi Range Comm. & Tech College, Eveleth
- 2012 – Winona State University, Winona (96)
- 2013 – Hibbing Comm. College, Hibbing (75)
- 2014 - Southwest Minnesota State Univ., Marshall (69)

Average Attendance - 69



Executive Committee

Chairman – Jim Miller, University of Minnesota Duluth

Vice Chair for Finance – Craig Pagel, Iron Mining Association

Vice Chair for Administration/Treasurer – Mike Hultgren, AIPG-MN Chapter

Vice Chair for Operations – Hannah Friedrich, MN Dept. of Natural Resources

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Harvey Thorleifson - Minnesota Geological Survey

Fred Corrigan - Aggregate & Ready Mix Association of MN

Dennis Martin – MN Dept. of Natural Resources, Division of Lands and Minerals

George Hudak – UMD Natural Resources Research Institute

Cheryl Sill – Minnesota Earth Science Teachers Association

Julie Elkington– Cliffs Natural Resources

2014 MMEW Instructors and Volunteers

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Name	Affiliation	Role
Steve Allard	Winona State University	Instructor
Greg Brick	U of MN-Twin Cities	Instructor
Fred Corrigan	Aggregate/Ready Mix Assoc. of MN	MCMRE Board Member
Jim deLambert	Liesch Associates	Instructor
Hannah Freidrich	MN DNR - Lands and Minerals	2014 Co-chair
Carrie Jennings	MN DNR - Lands and Minerals	Instructor & Field Trip Leader
Leif Johnson	Earr Engineering	Instructor
Jim Lundy	MN Department of Health	Instructor
Jim Miller	U of MN-Duluth	Instructor & 2014 Co-Chair
Dean Mousavi	Rochester Comm & Technical College	Instructor
Christina Morrison	Tiller Corp	Instructor
Dick Ojakangas	U of MN-Duluth (retired)	Instructor
Bruce Olson	MN Department of Health	Instructor
Marjorie Ostgaard	Marshall High School	Instructor
Amy Radakovich	Minnesota Geological Survey	Instructor
Ken Reid	U of MN-Twin Cities (retired)	Instructor
Kate Rosok	Minneapolis Schools	Instructor
Cheryl Sill	Cooper HS Robbinsdale	Instructor
Dave Southwick	Minnesota Geological Survey (retired)	Field Trip Leader
Alex Steiner	U of MN Duluth	Volunteer

2014 MMEW Sponsors

Aggregate Industries	Kelsey Capital Mgmt	Richard Backstrom
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Graham Ford	Peder Larson	WP & RS Mars Company
Industrial Lubricant	Petro Choice	Ziegler Caterpillar
Intex Corporation	Rendrag, Inc.	

2014 MMEW Lodging Scholarship Donors



Today's Schedule

	A	B	C	D
7:30-8:30	Registration – Science and Math Bldg, 1 st Floor near Natural History Museum Breakfast – Student Center Cafeteria			
8:30-8:50	Welcome/Introductions – Bellows Academic Auditorium (BA102)			
Session 1 9:00-10:15	Jigsaw on Heat – A Lab Activity <i>Kate Rosok</i> SM175	History of Hydrogeology <i>Greg Brick</i> SM274	Glacial Geology of SW Minnesota <i>Carrie Jennings</i> SM269	Crystallography Basics <i>Cheryl Siil</i> SM127
10:15-10:45	Mid-morning Coffee Break – Science and Math Bldg, 1 st Floor near Natural History Museum			
Session 2 10:45-12:00	Teaching Plate Tectonics <i>Stephen Allard</i> SM274	Ground Water Basics <i>Jim Lundy</i> SM175	The Sioux Quartzite and the Rock Cycle <i>Richard Ojakangas</i> SM269	Rock and Mineral Identification <i>Amy Radakovich</i> SM127
12:00-12:45	Lunch – Student Center Cafeteria			
12:45-1:25	Midday Presentation – Bellows Academic Auditorium (BA102) <i>Jess Richards</i> , Director, MN Department of Natural Resources, Lands and Minerals Division The Role of the Department of Natural Resources as Stewards of Minnesota's Mineral Resources			
Session 3 1:30-2:45	Place-based Teaching Approaches <i>Dean Moosavi</i> SM127	Sustainability of SW MN Groundwater <i>Jim deLambert</i> SM274	Aggregate Resources <i>Christina Morrison</i> SM175	Mineral Deposits – How, Where, When and Why Here? <i>Jim Miller</i> SM269
2:45-3:15	Mid-morning Coffee Break – Science and Math Bldg, 1 st Floor near Natural History Museum			
Session 4 3:15-4:30	Resource Lesson Plan Sharing <i>Marjorie Ostgaard</i> SM127	Protecting Groundwater instead of Mitigating Mistakes <i>Bruce Olson</i> SM175	Applied Geology: Assessing and Mitigating Geological Risks <i>Leif Johnson</i> SM269	Mineral Uses <i>Ken Reik</i> SM274
4:30-5:30	Teacher Resource Pick-up/Field Trip Overview – Bellows Academic Auditorium (BA102)			
6:00-9:00	Picnic Dinner at Camden State Park, Marshall Bus departs from Student Center Circle			

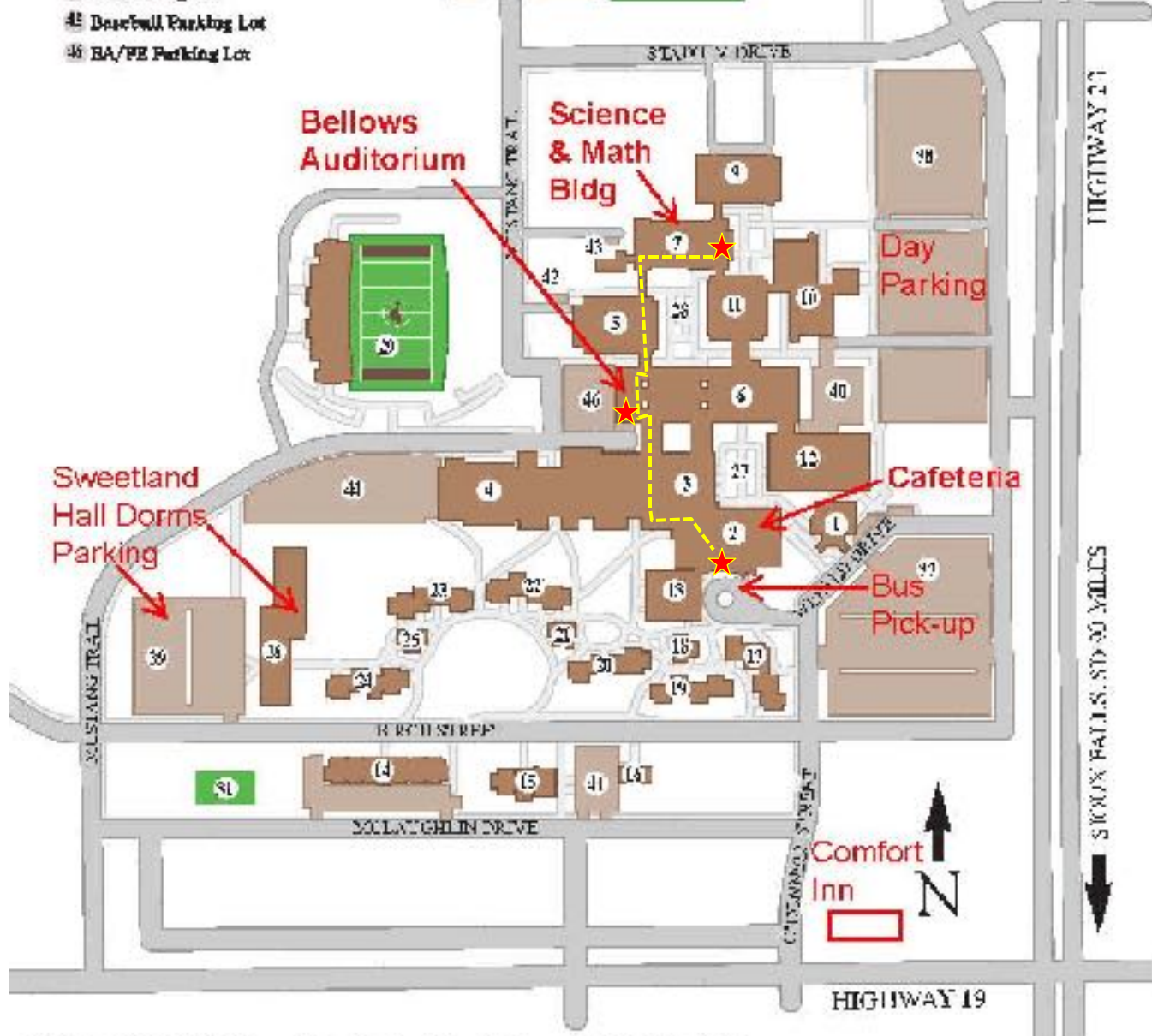
Course Assignments

2014 MMEW Course Selections

#	Last Name	First Name	Class Instructm	Room	SESSION 1: 9:00-11:15				SESSION 2: 10:30-12:00				SESSION 3: 1:30-2:45				SESSION 4: 3:15-4:30			
					Heat	HG Hst	Glacial	Crystal	P/Tect	GrndW	Stroix	R&M	Flacc	Sustain	Aggreg	MinDep	Sharing	Mitig	AppGeo	Min Uses
					KE	GB	CJ	CS	SA	L	RO	AR	DM	Jdl	CM	JM	MD	BC	Lj	KR
					1F	1E	1G	1D	2A	2B	2C	2D	3A	3B	3C	3D	4A	4B	4C	4D
					2M175	2M27N	2M26T	2M100	2M251	2M177	2M200	2M100	2M101	2M271	2M115	2M200	2M100	2M175	2M200	2M271
37	Basco	Steve						X	X							X	X			
38	Ball	John					X		X							X	X			
39	Bechtel	John					X					X								X
40	Becker	Shane				X					X		X							X
41	Benevier	Sarah			X				X				X							X
42	Boyd	Teresa					X				X					X				X
43	Boyer	Faye			X					X					X			X		
44	O'Donnell	Joe			X							X				X	X			
45	Boon	David				X				X				X						X
46	Borgert	Margene			X				X					X		X				
47	Borsari	Matthew					X				X			X				X		
48	Borison	Lisa						X							X					X
49	Borison	John			X				X				X				X			
50	Burke	Tanya					X				X					X				X
51	Burke	Gerard						X							X		X			
52	Borner	Matthew					X				X					X				X
53	Schall-Eckert	Sandra					X					X				X				
54	Schmitt	Margaret				X								X						X
55	Scobee	Spencer					X							X						X
56	Scott	Jennifer					X									X				X
57	Scott	Matthew			X				X							X	X			
58	Scott	Teresa					X				X					X				X
59	Shang	Frank					X									X				X
60	Shaw	Stanley					X					X								X
61	Shaw	Don					X					X						X		
62	Schaefer	John					X					X						X		
63	Schaefer	Wendy					X				X					X				X
64	Shaw	Eric			X				X							X		X		
65	Shaw	David			X				X					X			X			
66	Shaw	John					X					X								X
67	Shaw	Barbara				X										X				X
68	Shaw	Ken					X									X		X		
69	Shaw	Roby					X									X				X
Attendances					13	10	35	1	18	7	32	12	14	14	7	34	12	14	27	13
Total:					68				80				80				80			
X Alternate Choice																				

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Southwest Minnesota State University



2014 Evaluation Surveys

Survey Monkey - on-line survey

E-mailed to participants on Last Night and Tonight

Upon receipt of completed surveys, participation certificates will be e-mailed