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33RD ANNUAL MEETING OF
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MINING & RECLAMATION

June 4 - 9, 2016
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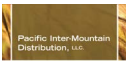
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Sunday, June 5, 2016

- 8:00 a.m. – 5:00 p.m. Workshop 1 - Natural Process
for the Restoration of Drastically Disturbed Sites
Meeting Room 1
- 10:00 a.m. – 4:00 p.m. NEC Meeting - Meeting Room 3
- 10:00 a.m. – 4:00 p.m. Exhibitor Setup - Grand Ballroom B
- 10:00 a.m. – 4:00 p.m. Poster Setup - Grand Ballroom A
- 10:00 a.m. – 4:00 p.m. Registration - Grand Ballroom Hallway
- 1:00 p.m. – 5:00 p.m. Wine Tour - Downtown Spokane
(on your own)
- 6:00 p.m. – 7:30 p.m. Exhibitor and Sponsor Welcome Reception -
Grand Ballroom B

Monday, June 6, 2016

- 6:30 a.m. – 8:30 a.m. Breakfast - Grand Ballroom A
- 6:30 a.m. – 7:30 a.m. Haulin' ASMR - Meet in lobby
- 7:30 a.m. – 5:00 p.m. Registration - Grand Ballroom Hallway
- 9:00 a.m. – 11:45 a.m. Plenary Session - Grand Ballroom C
- 9:00 a.m. – 9:15 a.m. Welcome - Conference Chair, Dustin Wasley
- 9:15 a.m. – 9:30 a.m. Welcome - ASMR 2016 President,
Brenda Schladweiler
- 9:30 a.m. – 9:45 a.m. Welcome - ASMR Executive Secretary,
Robert Darmody
- 9:45 a.m. – 10:30 a.m. Break - Exhibit Hall - Grand Ballroom B
- 10:30 a.m. – 11:00 a.m. Ann Kennedy, USDA-Ag Research Service
- 11:00 a.m. – 11:30 a.m. Joe Pizarchik, OSMRE Director
- 11:30 a.m. – 11:45 a.m. Announcements – Robert Darmody
- 11:45 a.m. – 2:00 p.m. ASMR Awards Luncheon - Grand Ballroom A

SEE NEXT PAGE FOR SESSION TIMES AND DETAILS

- 5:30 p.m. – 7:00 p.m. Happy Hour - Exhibit Hall - Grand Ballroom B
- 6:30 p.m. – 9:00 p.m. Early Careers Event Meet in Lobby beginning
at 6:15 pm, will walk to The Onion Downtown

POSTER SESSION AND MIXER

Wednesday, June 8th, 5:30 to 7:00 PM

The Poster Session will be held in Grand Ballroom A on Wednesday evening June 8th, along with a Social Mixer including refreshments. Posters will be displayed on easels provided. Below is a list of the abstracts that have been accepted for the Poster Session.

POSTER SESSION - GRAND BALLROOM A
Hydraulically Isolating An Existing Repository And Potentially Increasing Capacity by Kara M. Beaudoin
Metal Recovery Using Biogenic Sulfide From Acid Mine Drainage by Sangwoo Ji
Effect Of Different Forest Age On Soil Enzyme Activities And Microbial Diversity On Surface Mine Reclamation In Antaibao by Jinchuan Li
The Physiological Characteristics To Estimate Species Potential As Mine Reclamation Ground Covers by Eddy Nurtjahya
Interim Reclamation: The Benefits Of Temporary Reforestation For Meeting Final Reclamation Goals by Brad Pinno et al.
Interactive Effects Between Lime, Organic Matter, And Bacteria In The Establishment Of Leymus Cinereus In Mine Tailings by Deicy Sánchez
Recovery Rate And Purity Of Some Dissolved Metals In Mine Drainage From Abandoned Coal Mine by Gil-Jae
Fluorescent Dye Tracing In Abandoned Mines For Adit Discharge Source Control by Chapin Storrar
Salix Spp. As A Biomass Crop: Investigating Its Potential On Mined Lands And The Use Of Biochar As A Soil Amendment by Heather Nobert (Student)
Design And Construction Challenges For The Southeast Commerce Passive Treatment System by Bryan J. Page (Student)
Open Limestone Channel Performance For Aluminum-Rich Acid Mine Drainage by Charles Spellman (Student)
Contaminant And Treatment Dynamics In The Greater Rio Juckucha Watershed by Hannah Patton (Student)
Open Limestone Channels For Acid Mine Drainage Treatment: Effects Of Agitation On PH Increase by Swayer Rensel (Student)
Hydraulic And Biological Maintenance Challenges And Solutions In An Aging Passive Treatment System by Nicholas Shepherd (Student)
Geochemistry And Biota Of Bolivian Hypersaline Lakes by Rachel Wagner and Stefan Long (student)
Evaluating The Suitability Of A Reforestation Growth-Medium Prepared By Tractor Pulled Scraper Pans At An East Texas Lignite Surface Mine by Hannah Angel (Student)
Lab Scale Batch Weathered Limestone Testing To Determine System Sizing by Andrew Hollern (Student)
A Gis Model To Guide Revegetation Efforts On Reclaimed Mine Lands by Mark Mariano (Student)
Soil Conditions Promoting Long-Term Reforestation Of Appalachian Forests by Jenise Bauman (Student)
The Institutional Context of Reclamation: Changing Landscapes of Energy by Kathryn Bills-Walsh
Mechanical Suppression of Grasses to Reduce Competition with Wyoming Big Sagebrush (<i>Artemisia Tridentata</i>) Seedlings in a Fire Disturbed Landscape by Amy P. Jacobs (Student)
Insect Response to Reclaimed Well Pads with Different Vegetative Characteristics in a Semi-Arid Natural Gas Field by Michael F. Curran (Student) and Peter D. Stahl
Georeferencing of American Society of Mining and Reclamation Proceedings: Preliminary Trend Analysis by Ashley Rovder, Staci Wolfe, Stefan Long, David Madl, Peter Smyntek, Rachel Wagner, William Strosnider

AWARD WINNERS



Carl E. Zipper - William T. Plass Award

Nominated by: James Burger

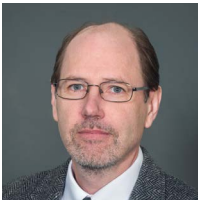
Carl E. Zipper is a Professor and Cooperative Extension Specialist with the Department of Crop and Soil Environmental Sciences at Virginia Tech. He received his Ph.D. in Agronomy from Virginia Tech in 1986. He serves as Director of the Powell River Project, a Virginia Tech program that conducts research and education programs to enhance restoration of coal-mined lands. He teaches undergraduate and graduate courses that concern environmental science at Virginia Tech. He is active in research and outreach concerning mined land reclamation, forest restoration on coal mined areas, and water resource management and protection. Congratulations, Carl!



James R. Truax - ASMR Reclamationist of the Year Award

Nominated by: Brenda Schladweiler

James R. Truax (Jim) worked in the landscaping business during high school and in college. He became a pioneer in seeding native prairie species in the Midwest by being a self-described “tinkerer” and a person who enjoys repairing and experimenting with machines. He started Truax Company, Inc. in 1974 to develop equipment to meet the challenges of seeding native species. His dedication to local causes and to his employees proves he is more than just a businessman looking to make a dollar. He understands that need too, but his focus is people in his community, state, and company. Congratulations, Jim!



Louis M. McDonald - R.I. & L.M. Barnhisel Reclamation Researcher of the Year Award

Nominated by: Jeff Skousen

Louis M. McDonald is a Professor of Soil Science in the Division of Plant and Soil Sciences at West Virginia University. He has degrees from the California Polytechnic State University, San Luis Obispo (B.S.), Louisiana State University (M.S.) and the University of Kentucky (Ph.D.). Since 1997, he has had teaching and research responsibilities in environmental soil chemistry and soil fertility. Louis teaches an undergraduate course in soil fertility, a graduate course in soil chemistry and coordinates graduate seminar. His research interests are the reclamation and remediation of disturbed and metal contaminated soils, especially the role of organic carbon in the mechanisms governing biological availability. He has benefited enormously, professionally and personally, from the generosity of his colleagues and the dedicated efforts of exceptional graduate and undergraduate students. Congratulations, Louis!



Melissa Van Scoyoc - Early Career Award

Nominated by: Cally Driessen

Melissa Van Scoyoc (B.S., Land Rehabilitation Science, Montana State University 2009) has over nine years of experience in wildland restoration in a variety of habitats. Currently, she coordinates the Habitat Restoration Program and is the GIS lead for the Salmon River

Restoration Council. She develops/implements anadromous fish habitat restoration in the California Salmon River. At present, she is coordinating the effort to collaboratively analyze and prioritize restoration sites along the river and major tributaries. She is also working on multiple projects including off-channel habitat restoration, large woody debris augmentation and in-stream barrier removal. Congratulations, Melissa!



Dr. Peter Beckett - Pioneer in Reclamation Award

Nominated by: Michele Coleman

Many people do reclamation. Many people do research in reclamation. Many people engage community groups and citizens to educate about reclamation. Dr. Peter Beckett has excelled in all areas. He has been a pioneer in research into restoring healthy

habitats and ecosystems (land, water and air) in severely degraded areas. Maybe most importantly as a pioneer, he has taken the extra steps to include the psychological and social restoration of the community through engagement, education and leadership long before social and public impacts became a concern in mining communities. His current research into forest understory development is trying to increase the pace of complete forest restoration. Congratulations, Peter!



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THE PHYSIOLOGICAL CHARACTERISTICS TO ESTIMATE SPECIES POTENTIAL AS MINE RECLAMATION GROUND

E. Nurtjahya¹ and J. Franklin²

¹Universitas Bangka Belitung, Indonesia, email: eddy_nurtjahya@yahoo.com

²Department of Forestry, Wildlife and Fisheries, University of Tennessee, Knoxville, TN

Introduction

While it is clear that the use of native species is preferable, species must be regionally selected based on local species assemblages and site characteristics of the reclaimed mine.

There is an additional challenge in cases where reclaimed soils are contaminated with metals, are highly acidic or alkaline, or coarsely textured, such in the Bangka Belitung islands.

An anatomical and physiological evaluation of native tree species for tin mine reclamation on Bangka Belitung island concluded that predictions of the best adapted species were not those that showed the best performance in the field. Further study to determine which traits can best predict success

To test physiological characteristics that may be used to predict ground cover success on mine reclamation sites, fourteen herb and grass species were studied. All are widely available commercially within the SE United States, but not all have been widely adopted for reclamation.



Figure 1. Herbaceous plants for reclamation must be able to establish under a wide range of soil types, such those on a quarry site (left) and coal mined land (right).

Material and Method

The experiment was carried out with fourteen herbs and grass species.

To test the influence of pH on germination, seeds were germinated at pH ranges of 5 – 10 in an incubator. Seeds were also sown in PVC pots on three different soil types: a vermiculite and quartz sand mixture, quarry overburden, and coal mine overburden. The plants were grown in the green house.



Figure 2. Seed germination and pot experiment

Plant height, cover and transpiration rates were measured throughout the investigation period. Leaf area and foliar pigment concentrations were measured at the end of the experiment.

Transpiration rate was measured using a LI-1600 chamber steady state porometer (LI-COR, USA). Leaf area was measured using a LI-3100 Area Meter (LI-COR, USA). Pigments were determined colorometrically (Bio-Mate 3, Thermo Scientific, USA) in ethanol extracts, using equations by Sesták et al. (1971) for chlorophylls a and b, and equation of Davies (1965) for carotenoids.

Results and Discussion

Based on measured traits (Table 1) and historical useage, red clover (*Trifolium pratense* L.) and white clover (*Trifolium repens* L.) showed the greatest potential as ground cover for mined soils in the eastern United States.

Table 1. Summary of traits potentially desirable in reclamation ground covers: germination percentage, rapid early growth and establishment (% ground cover at 14 days), similar responses across soil type for germination, % cover, height, and transpiration rate, similar germination at a wide range of pH (no germ. x pH), and high foliar pigment concentrations.

	Germ >30%	Cover >50% at 14 days	No germ. x pH	No cover x soil type	No height x soil type	No transp. x soil type	Low transp. rate	Foliar pigment > 0.4 mg/g
<i>B. napus</i>	✓	✓				✓	✓	
<i>B. perviridis</i>	✓	✓	✓				✓	
<i>D. glomerata</i>			✓	✓		✓		
<i>H. esculentus</i>	✓	✓	✓			✓	✓	✓
<i>L. multiflorum</i>		✓	✓		✓	✓	✓	
<i>L. perenne</i>	✓		✓	✓				✓
<i>L. corniculatus</i>			✓	✓		✓	✓	✓
<i>P. virgatum</i>			✓	✓		✓	✓	
<i>P. fagopyrum</i>		✓	✓			✓		
<i>S. scoparium</i>			✓			✓		✓
<i>S. nutans</i>	✓		✓			✓		
<i>T. pratense</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>T. repens</i>	✓	✓	✓			✓	✓	✓
<i>V. unguiculata</i>		✓		✓		✓	✓	

Species with a moderate growth rate, which may be able to tolerate and persist in the variable and low-nutrient environment of reclaimed mines, are more likely to be adopted for widespread use.

As the use of native species increases, the adoption of species should be based in greater part on their site suitability and biological characteristics, and on their ability to promote the development of maximum ecosystem functionality.

Conclusion

The preliminary results indicate that plant height and cover, transpiration rate, and foliar pigments may be used to predict plant adaptability to mined soil.

A field experiment is currently being conducted to monitor the growth performance of the clovers in the field, and which soil factors have the greatest influence.

Acknowledgements

The first author (68150141) would like to thank Fulbright for funding the research. The Department of Forestry, Wildlife and Fisheries, Institute of Agriculture, University of Tennessee kindly provided facilities to us undertake the research. Universitas Bangka Belitung is thanked for its permission allowing the first author to conduct research out of the campus.

Literature cited

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Abstract submission form and Poster Abstract

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Sat 1/9/2016 1:43 AM

To: rdarmody@illinois.edu <rdarmody@illinois.edu>;

Cc: Franklin, Jennifer Anne <j franklin@utk.edu>; ebudihar <ebudihar@utk.edu>;

 2 attachments (65 KB)

ASMR_Abstract_Submission Form_Nurtjahya&Franklin.pdf; Poster E_Nurtjahya&J_Franklin.doc;

Dear Dr. Darmody,

Would you kindly find our abstract submission form and a poster abstract for the coming 2016 ASMR Conference in June 2016.

Thank you.

Yours sincerely,
Eddy Nurtjahya Budi Hartono
Forestry, Wildlife and Fishery,
University of Tennessee, Knoxville
274 Ellington Plant Science Building
Knoxville, TN 37996

The Physiological Characteristics to Estimate Species Potential as Mine Reclamation Ground Covers¹

E. Nurtjahya², and J.A. Franklin,

Abstract: In finding what physiological characteristics can be used to predict ground cover success on mine reclamation sites, fourteen herb and grass species, whose seeds are widely available commercially within the southeastern United States, were tested. Establishment and early growth was tested on three different soils i.e. vermiculite and quartz sand mixture, quarry overburden, and coal mine overburden in a greenhouse. We tested germination rates in the pH range of 5–10, and the early growth, chlorophylls a and b, and carotenoids pigment content, and transpiration rates of 14 herbaceous species to determine whether these traits can be used to predict ground cover success on mine reclamation sites. The preliminary results indicate that plant height and cover, transpiration rate, and foliar pigments may be used to select plant adaptability to mined soil. Red clover (*Trifolium pratense* L.) and white clover (*Trifolium repens* L.) showed the greatest potential as ground cover for mined soils in the eastern United States. Species with a moderate growth rate, which may be able to tolerate and persist in the low-nutrient environment of reclaimed mines, are more likely to be adopted for widespread use. The field experiment is being conducted to monitor the growth performance of the clovers in the field, and which soil factor affect most.

Additional Key Words: physiological characters; cover crops; reclamation; mine revegetation; red clover and white clover

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2. Eddy Nurtjahya, Fulbright visiting scholar, Department of Forestry, Wildlife and Fisheries, University of Tennessee, 274 Ellington Plant Science, Knoxville, TN, 37996; and Jennifer A Franklin, Associate Professor, Department of Forestry, Wildlife and Fisheries, University of Tennessee, 274 Ellington Plant Science, Knoxville, TN, 37996.

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TABLE OF CONTENTS

VOLUME 1

WATER QUALITY

ROCK DISPOSAL AREA SEEP WATER TREATMENT AT THE JERRITT CANYON MINE	1
<i>K. Bertelsen, D. Johnston</i>	
A PAIRED COMPARISON STUDY TO EVALUATE THE EFFECT OF IONIC STRENGTH ON TRACE METAL REMOVAL PRODUCTS IN A VERTICAL FLOW BIOREACTOR SUBSTRATE	N/A
<i>J. A. Labar, R. W. Nairn</i>	
GOT ALUMINUM? -REMOVING SUSPENDED METALS WITH PEAT BASED SORPTION MEDIA	17
<i>P. Eger, P. Jones, D. Green, I. Kolomitsyn</i>	

LONG TERM RECLAMATION EVALUATION

RECLAMATION OF THE MCLAREN TAILINGS RESTORING PREVIOUSLY UNUSABLE AREA BACK TO ITS HISTORICAL LANDSCAPE	39
<i>M. Bennett, T. Henderson</i>	
SURVIVAL AND GROWTH OF CHESTNUT BACKCROSS SEEDS AND SEEDLINGS AFTER 8 YEARS ON SURFACE MINES	73
<i>J. Skousen, T. Cook, K. Dallaire, S. Scagline, A. Monteleone, L. Wilson-Kokes, J. Joyce, T. Keene, C. Delong, E. Pena-Yewtukhiw</i>	
EFFECTS OF TOPSOIL SUBSTITUTE MATERIALS, DEPTH OF MATERIAL, AND COMPACTION ON THE AVERAGE GROWTH RATES OF HARDWOOD TREES ELEVEN YEARS AFTER RECLAMATION	125
<i>K. Dallaire, J. Skousen</i>	

RECLAMATION APPROACHES

INNOVATIVE APPROACH USING GIS TO ADVANCE RECLAMATION AND BOND RELEASE	145
<i>R. T. Franzman, N. J. Wojcik</i>	
BENCH SCALE HEXAVALENT CHROMIUM REMOVAL WITH A BIOCHEMICAL REACTOR	156
<i>J. Gusek, L. Josselyn, H. Sauer, J. Razafindramanana, R. Razafimandrato</i>	
THE USE OF SOIL SAMPLING AND INVESTIGATIONS TO IMPROVE RECLAMATION COSTS	174
<i>J. Hartsig, A. Dejoia, D. Buckalew</i>	

WATER QUALITY

ACID MINE DRAINAGE TREATMENT WITH DISPERSED ALKALINE SUBSTRATE AND LIMESTONE BEDS	185
<i>K. E. Dieterman, C. L. Kairies-Beatty, P. Eger</i>	
PASSIVE AND ACTIVE TREATMENT OF ARSENIC AND ANTIMONY AT A REMOTE ABANDONED MINE SITE IN IDAHO	205
<i>K. Minchow, T. Rutkowski, J. Pepe</i>	
GREEN REMEDIATION OF ACID MINE DRAINAGE IMPACTED WATER: A FIELD-SCALE FILTER DEVELOPMENT USING AN INDUSTRIAL BYPRODUCT	216
<i>A. Roychowdhury, D. Sarkar, Y. Deng, R. Datta</i>	

LONG TERM RECLAMATION EVALUATION

DESIGN APPROACHES AND LESSONS LEARNED FOR THE DURANT CANYON RECLAMATION PROJECT	237
<i>P. Lemieux</i>	

ENVIRONMENTAL CONTROL OF SHRUB DENSITY DEVELOPMENT AT THE SENECA II MINE, 1987-2014, ROUTT CO. CO	271
<i>V. R. Pfannenstiel, D. L. Buckner</i>	
DETERMINATION OF PLANT COVER IN FIELD SAMPLING: A POINT-INTERCEPT METHOD FOR ALL STRATA	279
<i>D. L. Buckner</i>	

RECLAMATION TECHNOLOGIES

THE POTENTIAL OF BIOSOLIDS AND OTHER AMENDMENTS FOR REVEGETATION OF LEAD/ ZINC MINE TAILINGS WITH THREE BIOMASS CROPS: GREENHOUSE STUDY	301
<i>M. Al-Lami, J. Burken</i>	
LOOKING AT RECLAMATION IN TERMS OF ECOLOGICAL RESTORATION	318
<i>M. J. Vice</i>	
THE HOLISTIC APPROACH TO THE DESIGN, MONITORING, AND FUTURE PERFORMANCE ASSESSMENT OF A SURFACE BARRIER	332
<i>Z. F. Zhang, M. D. Freshley, D. M. Wellman, M. D. White, M. J. Truex</i>	

WATER QUALITY

AN APPALACHIAN REGIONAL STUDY TO PREDICT TDS RELEASE FROM COAL MINE SPOILS	348
<i>W. L. Daniels, Z. W. Orndorff, C. E. Zipper, J. Skousen, C. Barton, M. Beck, L. McDonald</i>	
PROOF OF CONCEPT BIO-TERRACE ALUMINUM REMOVAL AT AN ABANDONED METAL MINE, IDAHO	363
<i>J. Gusek, L. Josselyn, C. McCormack, D. Jenkins, J. Larson</i>	
DETERMINATION OF HYDRAULIC RETENTION TIME FOR PASSIVE TREATMENT SYSTEM OXIDATION UNIT USING RHODAMINE	380
<i>L. Oxenford, R. Nairn</i>	

LONG TERM RECLAMATION EVALUATION

REVEGETATION TRENDS AND SEEDING LESSONS AT TWO MONTANA COAL MINES BASED ON 20 YEARS OF MONITORING	393
<i>R. A. Producers</i>	
RECLAMATION PRACTICE INFLUENCES ON THE POST-MINING PLANT COMMUNITY AT A VIRGINIA MINE SITE AFTER SIX YEARS	459
<i>C. E. Zipper, S. K. Klopff, D. M. Evans, R. J. Krenz, J. A. Burger, S. Koropchak</i>	
LONG-TERM STUDY IDENTIFIES AVENUES FOR IMPROVING REVEGETATION EFFORTS	479
<i>M. J. Rinella, E. K. Espeland</i>	

RECLAMATION TECHNOLOGIES WITH BOMAG

DEEP TILL METHOD IN-SITU SOIL RECLAMATION WITH A BOMAG RECYCLER	490
<i>E. Waterman, R. Anderson, A. Sanchez, T. Howes</i>	
COMPOSITE SAMPLING - PRE IN-SITU SOIL RECLAMATION WITH A BOMAG RECYCLER	N/A
<i>M. Meadows, S. T. Nelson, R. Anderson, A. Sanchez, E. Waterman, T. Howes, B. Slade, S. T. Nelson</i>	
POST IN-SITU SOIL RECLAMATION WITH A BOMAG RECYCLER	N/A
<i>M. Williams, G. Gardner, S. T. Nelson, E. Waterman</i>	

WATER QUALITY

TREATMENT SYSTEM RESTORATION AND POWER GENERATION IN THE SLIPPERY ROCK CREEK WATERSHED	502
<i>R. M. Mahony, D. A. Guy, C. F. Denholm, T. P. Danehy, C. A. Neely, S. L. Busler, M. H. Dunn</i>	

AMD TREATMENT IN THE CHEAT RIVER & DECKERS CREEK WATERSHEDS - PASSIVE APPROACH	525
<i>C. A. Neely, T. P. Danehy, R. M. Mahony, D. A. Guy, S. L. Busler, C. F. Denholm, M. H. Dunn, D. Petry, N. Revetta</i>	
VALIDATING A METHOD FOR DETERMINING SPECIFIC CONDUCTIVITY IN MINING WASTEWATER	540
<i>J. L. Parks, G. Boardman, K. Gunther, C. Grey, S. Cox, Z. Kemak, A. Thomas</i>	

LONG TERM RECLAMATION EVALUATION

MINERAL SANDS MINE SOILS IN SOUTHEASTERN VIRGINIA: COMPARISON OF PHYSICAL AND CHEMICAL PROPERTIES AFTER EIGHT YEARS	561
<i>Z. W. Orndorff, W. L Daniels, K. Meredith</i>	
SWITCHGRASS BIOENERGY AS SILVOPASTURE ON RECLAIMED MINE SOIL	578
<i>D. Lang, J. Duckworth, V. Temu</i>	
NATURAL PROCESSES FOR THE RESTORATION OF DRASTICALLY DISTURBED SITES	597
<i>D. F. Polster</i>	

VOLUME 2

MAPPING/GIS

ECOLOGICAL PROBLEMS IN KAZRETI, GEORGIA, CAUSED BY COPPER AND GOLD MINE AND ITS RECLAMATION USING GIS SYSTEMS	667
<i>M. Avkopashvili, T. Hartshorn</i>	
BLENDING HISTORIC MAPPING WITH LIDAR AT ABANDONED MINE SITES	684
<i>C. Coover</i>	

WATER QUALITY

TDS ACCUMULATION IN AN OHIO CREEK AS IT TRAVELS THROUGH A COAL MINING SITE	710
<i>J. Peterson</i>	
COMPREHENSIVE WATERSHED RESTORATION VIA ECOLOGICAL ENGINEERING: THE ROLE OF PASSIVE TREATMENT	742
<i>R. W. Nairn</i>	
A REVIEW OF THE LITERATURE PERTAINING TO PASSIVE AND HYBRID TREATMENT SYSTEMS FOR REMOVAL OF TDS FROM MINING IMPACTED WATERS	779
<i>S. S. Cox, G. D. Boardman, Z. E. Kemak, J. L. Parks, C. Grey, K. Gunther</i>	

LONG TERM RECLAMATION EVALUATION

EVALUATING THE SUITABILITY OF A REFORESTATION GROWTH-MEDIUM PREPARED BY TRACTOR PULLED SCRAPER PANS AT AN EAST TEXAS LIGNITE SURFACE MINE	799
<i>H. Z. Angel, H. M. Williams, J. P. Stovall, K. Farrish, L. Young</i>	
MONTANA MOONSCAPES: MITIGATING LARGE-SCALE EROSION ON STEEP SLOPE UPLANDS IN ROADLESS AREAS OF THE ANACONDA SUPERFUND SITE	N/A
<i>P. Marques</i>	
UNDERGROUND MINE SUBSIDENCE EVALUATION, CLOSURE, AND RISK MANAGEMENT	N/A
<i>T. G. Wilson</i>	

DRONES AND UAV'S

UAS (DRONES) DE-MYSTIFIED, AND HOW THEY CAN HELP YOUR MINING RECLAMATION PROJECT	N/A
<i>J. Schane, T. Mullen</i>	

UNMANNED AERIAL SYSTEMS (UAS) - WHAT WE LEARNED IN OUR FIRST YEAR AS A COMMERCIAL OPERATOR	819
<i>M. R. Donner, D. C. Mummert</i>	

WATER QUALITY

LONG-TERM EFFECTIVENESS OF THREE PASSIVE SYSTEMS TREATING ACIDIC, HIGH-METAL, ABANDONED COAL MINE DISCHARGES NEAR DE SALE, PENNSYLVANIA	836
<i>C. F. Denholm, T. P. Danehy, M. H. Dunn, S. L. Busler, C. A. Neely, R. M. Mahony, D. A. Guy</i>	
PROOF OF CONCEPT AND PASSIVE BIOREMEDIATION AT AN ABANDONED MINE, IDAHO	859
<i>D. Jenkins, D. Stevens, H. Trejo, J. Gusek, J. Larsen</i>	
BIOCHEMICAL REACTORS FOR HARD ROCK MINING-INFLUENCED WATER: OVERVIEW OF TREATABILITY STUDIES AND LESSONS LEARNED FOR IMPLEMENTATION	871
<i>N. R. Anton, N. T. Smith, A. K. Frandsen, K. Saller, D. J. Reisman, R. L. Olsen</i>	
UNEXPECTED RELATIONSHIPS BETWEEN METHYLMERCURY ENRICHMENT IN FRESH WATERBODIES AND FOOD-WEB UPTAKE	883
<i>S. R. Dent, A. Greazel, E. Blischke, J. Hillenbrand</i>	

RECLAMATION IN CHALLENGING ENVIRONMENTS

RETHINKING ARSENIC RECLAMATION OF A "HELLAFUND" SITE, MONTANA	N/A
<i>S. Robinson, T. Hartshorn, T. McDermott</i>	
THE SPENCEVILLE COPPER MINE RECLAMATION	N/A
<i>W. J. Walker</i>	
RESTORATION IN CHALLENGING NORTHERN CLIMATES	N/A
<i>A. Zimmerman</i>	
INTERSTATE-CALLAHAN UPPER AND LOWER ROCK DUMPS REMEDIAL ACTION CONSTRUCTION PROJECT	895
<i>T. Wesche</i>	

INTERNATIONAL RECLAMATION

PATCHES: OPTIMIZING THE ECOLOGICAL BENEFITS OF DIFFERENT RECLAMATION SOILS ACROSS THE LANDSCAPE IN THE ALBERTA MINEABLE OIL SANDS REGION	915
<i>B. Pinno, I. Sherr, R. Errington, K. Shea</i>	
SUCCESSION OF ALGAE, MOSS, AND HERBACEOUS FLORA DURING 29 YEARS IN PRAIRIE OPENCAST COAL MINE, INNER MONGOLIA, CHINA	N/A
<i>X. Fan, Z. K. Bai, P. Y. Sun</i>	
REVEGETATION OF JHARIA COALFIELD USING REMOTE SENSING, BASED ON THERMAL INFRA-RED DATA: A CASE STUDY	N/A
<i>P. Kumar, A. Horel</i>	

ECOLOGICAL IMPLICATIONS OF RECLAMATION

COMPACTION IMPACTING HYDROLOGY AND TREE GROWTH ON A DEMONSTRATION MINE IN THE WESTERN GULF	925
<i>C. L. Comer, J. P. Stovall, M. W. McBroom, H. M. Williams, Y. Zhang</i>	
SURFACE MINE TO BIOMASS FARM: GROWING SHRUB WILLOWS (SALIX SPP.) IN NORTHEASTERN WEST VIRGINIA - FIRST YEAR RESULTS	942
<i>B. Caterino, J. Schuler, S. Grushecky, J. Skousen</i>	
THE EFFECTIVENESS OF NATIVE SEED DISPERSAL ISLANDS IN RECLAIMED MINE LANDS DOMINATED BY EURASIAN GRASSES	958
<i>R. W. Pal, K. Douglass, M. Mariano, K. Weilage</i>	

AML CASE STUDIES

EAST FORK NINEMILE WASTE CONSOLIDATION AREA SITE SELECTION, DESIGN AND INITIAL CONSTRUCTION	980
<i>C. J. Lechleitner, D. Meyer</i>	
REVEGETATION OF THE FOREST ROSE MINE IN WESTERN MONTANA	995
<i>L. J. Ballek, K. Houck, D. Clary, S. Thornborrow</i>	
REMOVAL ACTION AT THE MONTE CRISTO MINING AREA	1011
<i>R. M. Tobias</i>	

INTERNATIONAL RECLAMATION

EFFECTS OF LANDSCAPE TRANSITIONS DUE TO UNDERGROUND COAL MINING ON ECOSYSTEM SERVICES IN HIGH GROUNDWATER TABLE AND UNDERGROUND COAL MINING AREA: A CASE STUDY OF YANZHOU COALFIELD	N/A
<i>W. Xiao</i>	
INTEGRATED APPROACHES OF WATER AND SOLID WASTE MANAGEMENT IN MINING RECLAMATION OF COIMOLACHE MINING COMPANY-PERU	1051
<i>R. Huancaya, A. Sagástegui, D. Sánchez, J. Gabriel, E. Meza, A. Fernández, C. Quinto</i>	
INNOVATIONS OF LAND RECLAMATION AND ECOLOGICAL RESTORATION IN COAL MINING AREAS IN CHINA	1067
<i>Z. Hu</i>	

REVEGETATION CHALLENGES

IMPROVED METHODS OF ASSESSING PLANT SPECIES DIVERSITY ON MINE RECLAMATION SITES: A 10-YEAR UPDATE	1086
<i>D. L. Buckner</i>	
EVALUATION OF SMALL TREE AND SHRUB PLANTINGS ON RECLAIMED SURFACE MINES IN WEST VIRGINIA	1101
<i>A. Monteleone, J. Skousen, L. McDonald, J. Shuler, J. Pomp, M. French, R. Williams</i>	
RIPPING AND NATIVE SEEDING TREATMENTS INFLUENCE ON VEGETATION COMPOSITION OF COMPACTED TAILINGS	1122
<i>J. A. Franklin, M. Aldrovandi</i>	

HEAVY METALS CHARACTERIZATION AND REMEDIATION

ACID SOIL REMEDIATION AND REVEGETATION OF METAL CONTAMINATED PASTURES, DEER LODGE, MONTANA	N/A
<i>S. R. Jennings, T. Parker</i>	
UPDATE TO TRIBAL-LED REMEDIAL ACTION AT THE TAR CREEK SUPERFUND SITE	N/A
<i>T. Kent, C. Kreman</i>	
REDUCING FRESH WATER CONSUMPTION IN HYDRAULIC FRACTURING BY USING ACID MINE DRAINAGE AS A MAKE-UP FLUID	1133
<i>E. E. Cavazza, R. L. Beam, M. P. Cavazza</i>	

MINE CLOSURE AND RECLAMATION

MINING RECLAMATION THROUGH SERVICE-LEARNING: CASE STUDIES FROM WISCONSIN	1152
<i>Y. Johnson, J. Wyant, R. Feiden, A. Gitlin</i>	
TRUE NORTH MINE RECLAMATION PROJECT	N/A
<i>M. Huffington</i>	
COST EFFECTIVE PLANS FOR SUCCESSFUL MINE CLOSURE - RECENT CASE STUDIES	1164
<i>M. S. Theisen, D. Sump</i>	

RESTORATION AND REVEGETATION

ADVANCED PLANNING AND MEASURABLE OUTCOMES: RESTORATION SUCCESS IN SOUTHERN COLORADO 1193
D. R. Chenoweth, J. W. Schneider, D. Buckner

WHAT'S SO GREAT ABOUT BEAVERS? 1213
S. Firor

NOVEL CAPPING AND REVEGETATION OF AN ABANDONED MERCURY MINE, CALIFORNIA 1229
D. Jenkins, D. Stevens, H. Trejo, A. Campbell, V. Claassen

PASSIVE BIOLOGICAL TREATMENT APPROACHES TO REDUCE CONDUCTIVITY IN WATERS AFFECTED BY MINE DRAINAGE: KEY CHALLENGES & RESEARCH NEEDS 1240
P. M. Smyntek, R. C. Wagner, S. Carvajal-Sanchez, T. M. Wynn-Thompson, L. H. Krometis, W. H. J. Strosnider

RECLAMATION IN CHALLENGING ENVIRONMENTS

DEVELOPING A CONCEPTUAL SITE MODEL IN A WATERSHED WITH MULTIPLE MINE WASTE DUMPS, BUNKER HILL SUPERFUND SITE, EAST FORK NINEMILE BASIN N/A
E. Naylor, A. Hughes, T. Mullen, Christina Johnson

COAL MINE RECLAMATION COSTS AND LOCAL ECONOMIC IMPACTS IN THE POWDER RIVER BASIN IN WYOMING N/A
A. Perry, K. Hansen, R. Coupal

MONITORING THE BEHAVIOR OF SLUDGE IN THE VADOSE ZONE N/A
M. Coleman, K. E. Butler

STREAMLINING THE RECLAMATION MONITORING AND REPORTING PROCESS: A DIGITAL RECLAMATION MONITORING TOOL N/A
N. J. Wojcik, P. J. Gordon, R. T. Franzman, D. R. Reinhart

HEAVY METAL CHARACTERIZATION AND SOURCE IDENTIFICATION FOR GROVE GULCH IN BUTTE, MT N/A
R. M. Nagisetty, G. Craig, W. Drury

TREATMENT AND WETLANDS

TROMPE DESIGN, CONSTRUCTION AND PERFORMANCE 1257
T. P. Danehy, K. J. Palmer, R. M. Mahony, C. A. Neely, D. A. Guy, C. F. Denholm, M. H. Dunn, B. R. Leavitt

REMEDICATION OF ACID MINE DRAINAGE USING A SULFATEREDUCING BIOREACTOR AT THE TAB-SIMCO PASSIVE TREATMENT SYSTEM - AN UPDATE 1274
P. T. Behum, A. Mick, K. Pankey, L. Lefticariu

CASE STUDY: BAIRD WETLAND MITIGATION 1296
S. L. Busler, Y. Sheykhet, D. A. Guy, T. P. Danehy, R. M. Mahony, C. F. Denholm, C. A. Neely, M. H. Dunn

THE RELATIONSHIP BETWEEN STUDENT SERVICE LEARNING AND TECHNICAL ASSISTANCE IN MINE WATER RECLAMATION 1304
K. J. Palmer, J. S. Vinglish, M. A. Reckner, W. H. J. Strosnider

Author Index