

Potomac River & Chesapeake Bay Issue Investigations:

Hands-On Science in Action



Table of Contents

Unit 1. Welcome & Introduction	1-1
1.1 Welcome.....	1-1
1.2 Curriculum Organization.....	1-3
1.3 Lesson Plan Format.....	1-6
1.4 The Five E's Model of Learning.....	1-7
1.5 An Overview of the Hard Bargain Farm Environmental Center Environmental Education Program.....	1-11
1.6 The Alice Ferguson Foundation.....	1-12
1.7 Hard Bargain Farm Brochure.....	1-16
1.8 Alice Ferguson Foundation's Annual Potomac River Watershed Cleanup.....	1-19
Unit 2. Investigating Your Watershed	2-1
Overview	2-1
2.1 Sprinkle A Day.....	2-3
2.2 Crumpled Paper Watershed.....	2-9
2.3 Mapping Basics.....	2-19
2.4 Journaling.....	2-32
2.5 Watershed Address.....	2-40
2.6 Mapping Your Surroundings.....	2-45
Teacher Resources	2-52
Unit 3. Waste Management: The Cycle is Broken	3-1
Overview	3-1
Student Introduction to Waste Management	3-3
3.1 Trash Timeline.....	3-4
3.2 Who Polluted the Potomac?.....	Insert
3.3 Trash Tally.....	3-9

3.4 Composting.....	3-17
3.5 Compost in a Bag: Moving Beyond Rot.....	3-27
3.6 Complete the Compost Heap.....	3-34
3.7 Take Out the Trash	3-45
3.8 Vermicomposting: Worms in Your Classroom.....	3-59
Creating a Vermiculture Bin.....	3-65
3.9 Cup of Compost.....	3-71
3.10 Rethink, Reduce, Reuse, & Recycle.....	3-74
Teacher Resources.....	3-77
Unit 4. Erosion & Runoff: Slip Slidin' Into the Bay.....	4-1
Overview.....	4-1
Student Introduction to Runoff & Erosion.....	4-3
4.1 Apple Earth: How Big is Your Bite?.....	4-4
4.2 Sweet Resources.....	4-8
4.3 Soil Study.....	4-14
4.4 Great Terrain Robbery.....	4-19
4.5 Does Your Soil Perc?.....	4-26
4.6 Sediment: Choking the Life Out of the Bay*.....	4-39
4.7 Water Quality Testing.....	4-47
4.8 Wetland Metaphors*.....	4-61
4.9 Bernie's Toes.....	4-65
4.10 Designing a Schoolyard.....	4-71
Teacher Resources – Erosion & Runoff.....	4-75
Unit 5. Ecosystem Diversity.....	5-1
Overview.....	5-1
Student Introduction to Ecosystem Diversity Unit.....	5-3
5.1 Classified Information: Fishing for a Name & Creature Feature.....	5-4
5.2 Let's Take a Dip.....	5-5
5.3 Eat Like a Bird.....	5-15
5.4 Animal Adaptations Field Study.....	5-21
5.5 Oh Deer!*.....	5-35
5.6 Macroinvertebrate Field Study.....	5-43

5.7 Frankenfish.....	5-53
5.8 Ecosystem Food Web Mural.....	5-68
Teacher Resources – Ecosystem Diversity.....	5-77
Unit 6. Issue Investigation, Reflection, and Action Projects.....	6-1
Overview.....	6-1
6.1 Environmental News.....	6-2
6.2 Issue Investigation Framework.....	6-7
6.3 Circle of Concern.....	6-11
Action Project Ideas & Resources.....	6-14
Unit 7. Appendices.....	7-1
Overview.....	7-1
Appendix A. Illustrated Glossary.....	7-2
ADAPTATIONS.....	7-3
BIODIVERSITY.....	7-4
COMPOSTING.....	7-5
ENERGY CYCLE: FOOD CHAINS & FOOD WEBS.....	7-6
EROSION.....	7-7
HABITAT.....	7-8
NICHE.....	7-9
PREDATOR/PREY.....	7-10
RECYCLING.....	7-11
SEDIMENTATION.....	7-12
SOIL.....	7-13
VERMICULTURE.....	7-14
WATER CYCLE.....	7-15
WATERSHED.....	7-16
Appendix B. Key Concept Index.....	7-17
Appendix C. Subject Index.....	7-19