Record Nr. UNINA9910779078803321 Flood hazard identification and mitigation in semi- and arid **Titolo** environments / / editors, Richard H. French, Julianne J. Miller Pubbl/distr/stampa Singapore:,: World Scientific,, 2012 ©2012 **ISBN** 981-4355-10-0 Descrizione fisica 1 online resource (237 p.) Disciplina 627.4 Soggetti Alluvial fans Flood control Arid regions Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Nota di bibliografia Includes bibliographical references at the end of each chapters. Foreword; Contents; 1. Introduction; 1.1 Introduction; 1.2 Alluvial Fan Nota di contenuto Hazards: 1.3 Playa Lakes: 1.4 Conclusion: References: 2. Geologic and Hydraulic Concepts of Arid Environments; 2.1 Introduction; 2.1.1 Desert landscape formation; 2.2 Geologic Theories of Formative Processes; 2.2.1 Catastrophism; 2.2.2 Gradualism (Uniformitarianism); 2.2.3 Integration; 2.3 Flow Processes; 2.3.1 Fluvial; 2.3.2 Hyperconcentrated flows; 2.4 Soils; 2.4.1 Soil formation in arid environments; 2.4.2 Desert pavement; 2.4.3 Indurated soil layers; 2.4.4 Vegetation and biologic role in soil development 2.5 Runoff, Infiltration Potential, and Transmission Losses2.5.1 Runoff and infiltration potential; 2.5.2 Channel transmission losses; References; 3. Traditional Approaches to Flood Hazard Identification and Mitigation on Alluvial Fans; 3.1 Introduction; 3.2 Background; 3.3 Technical Issues Regarding the Assumptions; 3.4 Implementation of the Assumptions; 3.4.1 Understanding the traditional approach; 3.4.2 Implementation for hazard identification; 3.5 An Approach to Hazard Mitigation; 3.6 Conclusion; References; 4. New Approaches for Alluvial Fan Flood Hazard 4.1 Predicting Alluvial Fan Flooding - Background4.2 FEMA's Three Phase Approach to Alluvial Fan Flood Mapping: 4.2.1 Identification of

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## Sommario/riassunto

Alluvial fans are ubiquitous geomorphological features that occur throughout the world, regardless of climate, at the front of mountains as the result of erosion and deposition. They are more prominent in semi- and arid climates simply because of the lack of vegetative cover that masks their fan shapes in more humid areas. From both engineering and geological viewpoints, alluvial fans present particular fluvial and sedimentation hazards in semi- and arid regions because episodic rainfall-runoff events can result in debris, mud, and fluvial flows through complex and, in some cases, migratory ch