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前 言

水文地质工程地质研究所年报，反映我所1978—1980年各研究课题研究成果，以摘要形式概述其主要内容、学术论点及实验成就。本期分九个部分，共116篇摘要。一、为区域水文地质；二、为地下水地球化学；三、为地下热水；四、为岩溶水文地质及岩溶矿床；五、为地下水资源计算及评价；六、为第四纪地质、地貌及数学地质；七、为工程地质；八、为遥感地质、计算机技术、地下水探测；九、为地下水水质分析及土工测试。每篇摘要之后附有简要的英译文。

上述各研究成果的全文。正在审编中，并将以水文地质工程地质研究所所刊形式推荐出版。

地质矿产部水文地质工程地质研究所

一九八一年十二月

Preface

This annual report from the Institute of Hydrogeology and Engineering-geology represents the achievements of all the investigating subjects in the institute in scientific research during 1978—1980. The present report, a brief account on the main content, academic view-point and the success in experiments in abstract form, can be divided into 9 parts namely: 1. regional hydrogeology, 2. groundwater geochemistry, 3. geothermal water, 4. karst hydrogeology and mineral deposits in karst formations, 5. calculation and evaluation of groundwater resources, 6. Quaternary geology, geomorphology and mathematical geology, 7. engineering geology, 8. remote sensing geology, and 9. groundwater chemical analysis and geotechnical test. There are altogether 116 pieces of abstracts, each accompanied by an English translation in the report.

The full texts of each positive result mentioned are being checked, approved and compiled, and would be recommended to be published in the form of the publication of our institute.

The Institute of Hydrogeology & Engineering-geology, the Ministry of Geology and
Ministry Resources. Dec. 1981

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河北平原水文地质结构的研究（摘要）

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近年来迫于区域水资源评价的需要，为了弄清楚一定区域范围内地下水赋存的边界条件，要求对含水地质体，特别是对第四系含水层组结构与水质、水量、水动力的关系进行研究，而且因为要了解地下水的赋存和运移的来龙去脉，要总结砂层作为含水介质所具有分布规律及与水质、水量运动的关系，使每个勘探孔、取水点了解它在整个含水地质体中的部位，以便根据点的资料推测面上的条件，达到既能节约勘探工作量，又能提高勘探评价的质量，花最少勘探成本，取得最大勘探成果的目的。这个问题已日益被人们所重视。本文是在河北平原第四系及第四系含水层组划分的研究基础上，对此问题所提出的一些看法。

第四纪沉积物作为接受和储存地下水的容器，对地下水的形成有十分重要的控制作用。松散岩层中的水文地质构造是指一定地质地理背景下，由沉积产生的同生构造，具有一定的几何形态，有相应的富水性（导水性），水质、水位及径流特征。在漫长的地质历史过程中，地下水不断运动、循环交替，但所沉积的地质结构始终控制着地下水的历史变化。因此，为了查清地下水质、水量的空间运动规律，必须将其依附于水文地质体的结构、构造的时间及空间变化进行研究。由于河北平原第四系沉积物具有巨厚性和多层性，因此就很少存在单一的水文地质构造（体），往往是以多个相同的或不相同的水文地质构造体相互迭置出现。为了便于研究水文地质构造（体）的平面展布特征及空间迭置关系，对水文地质构造的研究应放在“结构层”的基础上进行。所谓结构层，是指在某一地层时间段内发育着多个大致相同或者是属于一个主要水文地质构造的地层单元。如存在有多个结构层的情况下，一种或多种水文地质构造体呈现邻接、迭置等结构关系的范围，称为“结构片”。多个结构片的分布范围，它具有类似的地质、地貌和沉积物成因特征及类似的水质、水量和水动力变化特征，划分为“水文地质结构区”。

研究水文地质结构，首先从分析第四纪古地理演变和挽近构造活动入手，根据沉积物的沉积特征，进行岩相古地理的研究。如同现代地理、地貌控制着现代表层地下水的质和量一样，地质历史上的古水文地质条件，受当时地理、地貌的控制，但与现代不同的是，后者已受到后期地理、地貌条件的影响，对前期地下水不断地进行着改造。所以确定水文地质结构，不但要掌握区内含水地质体的内部结构变化，还要了解其总体的形成和发展的历史。

确定和划分水文地质结构的根据是：

一、水文地质构造（体）

（一）根据含水地层的某一时间段内该含水地质体的主要沉积相，具体根据岩性特

征,古生态、砂层百分比,砂层平面分布形态、分布序列以及分布区的地理、地貌部位而定。
(二) 有相应的水质、水量和水动力特征。

二、水文地质结构片

根据水文地质结构体的多层迭置状况所反映的蓄水条件细分为：迭置结构片、交迭结构片及复合结构片。并以其成因类型和构造（体）的岩性特征冠以“扇区”、“扇间”、“河道带”等命名各种次一级结构片。

三、水文地质结构区

- (一) 根据不同结构片分布的地质、地貌条件及沉积物成因类型的区域差异；
- (二) 它们在水文地质特征上有相似的水质演化阶段，有类似的导水性变化趋势和共同的补给、径流特征。

根据上述原则，河北平原从山前至滨海，初步可归纳为五类水文地质结构区、八种以上水文地质结构片和十三种以上水文地质构造（体），见表1。其中几个主要水文地质结构的水文地质特征见表2（略）

河北平原水文地质结构类型表 表 1

水文地质结构区	水文地质结构片	水文地质构造（体）
I 山前平原扇形堆积结构区	I ₁ 扇体（扇形堆积）迭置结构片 I ₂ 扇间交迭结构片 I ₃ 扇洼（堆积）复合结构片	I a扇形构造 I a ₁ 冲洪积扇构造 I a ₂ 冰水扇构造 I b扇洼构造
II 中部平原河道沉积结构区	II ₁ 河道密集带结构片 II ₂ 河间带交迭结构片 II ₃ 河间洼地复合结构片	II a河道带构造 { 浅埋型 深埋型 II b河间带构造 II c河间洼地（游移性水淀）构造 II d河口三角洲构造 II e扇前洼地构造 II f浅湖沼泽洼地构造
III 滨海平原海陆交互沉积结构区	III ₁ 海陆交互层结构片 III ₁ ¹ 河道带—滨海三角洲交迭结构片 III ₁ ² 河道带—泻湖沉积结构片 III ₁ ³ 河道带—滨海三角洲交迭结构片 III ₁ ⁴ 河间带—泻湖沉积交迭结构片 III ₂ 海积层结构片	III a滨海三角洲构造 III b泻湖沉积构造 III c浅海沉积构造
I—II 扇区—河道带交接结构区		
I—III 扇区—滨海过渡结构区		

全文共附图94幅，附表23张，