Promoted Research of Using Constructed Wetlands to Treat Municipal Wastewater from Rural Communities in Taiwan

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ABSTRACT: Due to large land area and long treating time requirement, obtaining enough space to build constructed wetland (CW) for treating municipal wastewater is a main break through needed to be done. Since 2001, the government of Taiwan has been promoted integral plans and constructions via land adjustment for rural communities. The original dispersal individual villages can be expanded the range by regional integral development and increase of public facilities. After adjustment, the lands for living purpose would be centralized by new plans, so that the municipal wastewater can be accumulated by construction of sewage systems within small region. In addition, some part of the land after adjustment will be used for public facilities, then can be also used for building CWs. The concept of making land application more efficient has been tried for more than a decade and should be a feasible way for solving the land shortage problem while using CWs. Although the land problem is solved, there are still many difficulties appeared during operating the projects of using CW, such as lacking of regulations for related facilities and water quality requirements, so that governmental offices from various levels do not have clear and powerful authorizations to proceed the projects. In some cases, people from

opposed such ideas due to insufficient communications. Some systems were not operated well, because of financial difficulty, so as not obtaining satisfactory results or efficiencies. Therefore, this research focuses on the cases from regions had been performed projects of land adjustment in past three years to study the difficulties and changes of promoting the ideas for install CW from viewpoint of policies, regulations, and operations to provide information for proceed related projects in the future.

KEYWORDS: constructed wetland, rural communities, land adjustment, operation phase, wastewater treatment

應用人工溼地淨化農村社區生活汙水之推動研究

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應用人工濕地處理家庭生活汙水，其所需地用地面積稍大與淨化時程相對較久，因此在土地取得上較難以突破。自 2001 年起，政府推動農村社區以土地重劃方式作整體規劃建設，原舊有鄉村聚落因區域整體發展及增加公共設施，足可擴大其新舊範圍。重劃後，除將農村社區內之住宅用地集中劃設，亦可配合施設小區域之下水道系統，生活汙水可集中處理，並利用辦理重劃所取得之公共施設用地，設置具自然淨化功能之汙水處理設施-人工濕地，此方式在國內已歷經十餘年嘗試，應為可推行之方法。然而重劃區內建造人工濕地用地雖獲得解決，但執行中仍遭遇相當多的困難，諸如相關設施及水質合格檢測法令欠缺或不完善，致各級政府無明確或有利地依據予以執行；或因宣導不足，致鄰近居民反對設置人工溼地及相關設施；甚因經費不足致維護管理不良影響成果與效益。因此，本研究以近 3 年來曾辦理農村社區土地重劃地區為案例，以政策面、法令面、執行面來探討設置人工溼地時之困難，及改變推動理念，以提供未來繼續執行之參考。

關鍵字：人工溼地、農村社區、土地重劃、執行面、汙水處理