



underground structures include a water distribution system. The sewer is a gravity sewer which was implement more than 10 years ago. Combined sewer are used to collect wastewater from residential, commercial, industrial source, and stormwater. Old combined sewer discharge wastewater into receiving public canal. The 4 points of discharge drainage system to receiving water are shown in figure 2.



Figure 2. Drainage systems in Pluakdaeng municipality.

Storm water is generally less polluted than waste water. It is quite hard to treatment of combined wastewater and stormwater during heavy rainfall resulting in combined sewer overflow, CSO (Haney, 1999). In Pluakdaeng municipality there are average flow of 1500 m<sup>3</sup> to 2000 m<sup>3</sup> per day ,a centralize system would be the best suited. Conventional gravity sewers transport wastewater by gravity flow from high to low points (Mtcalf and Eddy, 1991). Their designs in slope and size of the pipe are adequate to maintain flow towards the discharge point without surcharging manhole or pressurizing the pipe. The need of self cleansing slope can require deep excavation and/or additional pumping or lift stations. Pressure sewer used the pressure force supplied by pumps to deliver wastewater to centralize location system (US EPA, 1991). Another type of sewer system is vacuum sewer system (USEPA, 1991). It takes wastewater from a holding tank. When the wastewater reaches a certain level, sensors within a holding tank open vacuum valve that allow the contents of the tank to be sucked in to the network collection piping. In Pluakdaeng municipality pumping sewage will use to supply the

waste water. In figure 3, it shown the layout of collection systems. In Pluakdaeng, the collecting system is central system and compose of 14 manholes before sump pump.

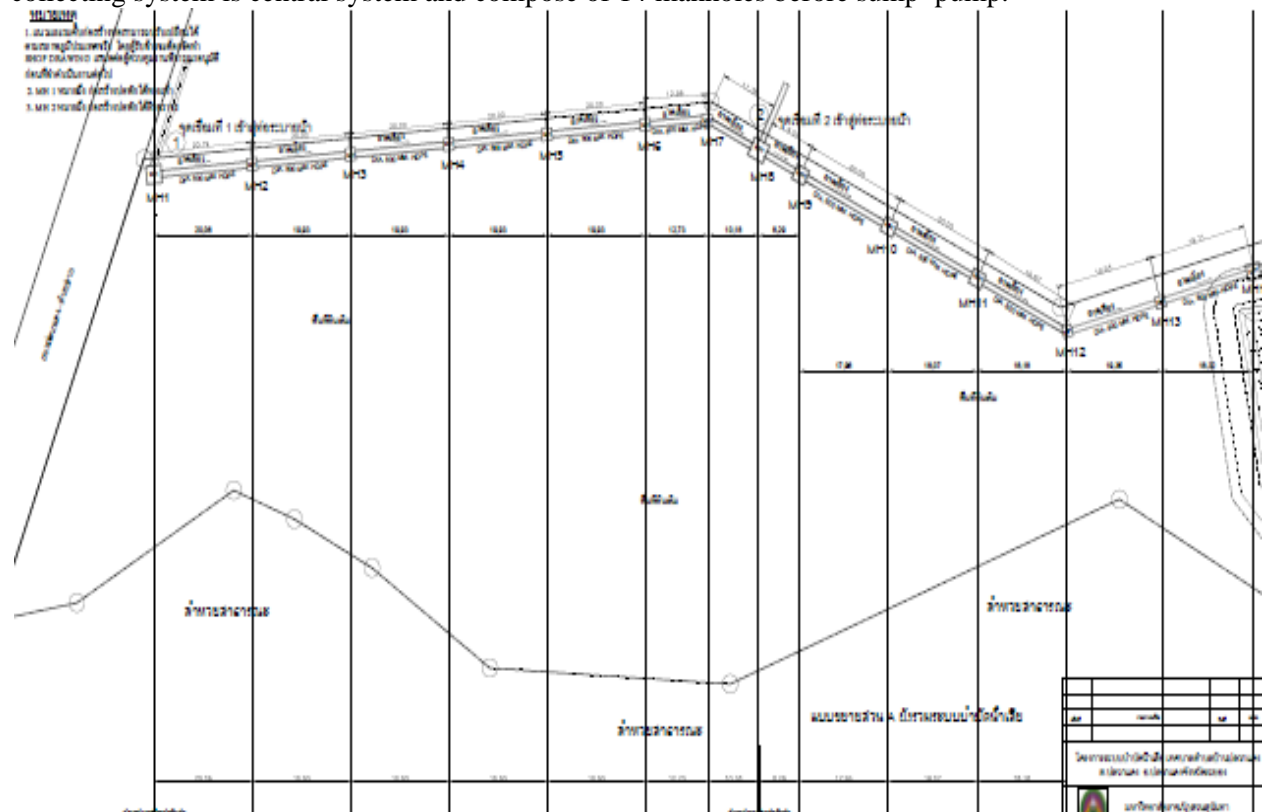


Figure 3 Centralize collecting system layout

### 5. References

[1] Franklin Associate, 1998. Characterization of building –relate construction and demolition debris in the United States. Rep. EPA530-R-98-01: USEPA, Washington, DC.