

Thesis Title	An Application of GIS for a Suitability Assessment of Factory Placement in Amphur Wangnoi, Ayutthaya Province
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### Abstract

Recently, landuse for industrial purpose in Amphur Wangnoi, Ayutthaya Province has been increasing. In 1996 the production from the industry sector was 38.73 % of Gross Provincial Product (GPP). An evaluation conducted by the Department of Industrial Works indicated that the level of pollution caused by factories located in Amphur Wangnoi is not at a critical level at the moment. However, data indicates that more than 50 % of the factories produce some pollution and are likely to worsen the problem to a serious level. To control and protect against the pollution problems in the near future it is important that the environmental factors should be considered for factory zoning and planning .

In this study, a geographic information system (GIS, UNIX ARC/INFO version 7.0) was used to determine land suitability for locating type 1, type 2 and type 3 factories in Amphur Wangnoi, Ayutthaya Province. (Type 1 factories do not produces any pollution, type 2 produces relatively little pollution and type 3 produces the most). Environmental factors used to assess suitability were proximity to roads, rivers, urban areas, public areas, as well as land use type. Numerical weights of the main factors were assigned and suitability rankings were derived from a survey of experts as well as legal information relating to factory placement. A series of overlays were conducted and ranks from each layer were combined additively to form a final suitability score for all type of factories.

The results from this study suggest that the total area of marginally, moderately and highly suitable land for type 1 factories was 78,592.66 rai or 54.04 % of the total study area,

6,484.01 rai or 4.46 % and 16,694.95 rai or 11.48 % respectively. The remaining area of 43,649.84 rai or 30.02 % was considered unsuitable for factory type 1 placement. The total area of marginally, moderately and highly suitable land for type 2 factories was 4,465.33 rai or 3.07 %, 76,195.18 rai or 52.39 % and 21,111.11 rai or 14.52 % respectively. The remaining area of 43,649.84 rai or 30.02 % was considered unsuitable for factory type 2 placement. The total area of marginally, moderately and highly suitable land for type 3 factories was 9,799.27 rai or 6.74 %, 21,768.80 rai or 14.97 % and 70,063.46 rai or 48.18 % respectively. The remaining area of 43,789.93 rai or 30.11 % was considered unsuitable for factory type 3 placement. A comparison of the area of suitable land for all factory type, reveals that highly suitable land for type 3 factories covers more area than other type of factories. High suitability (48.18 %) for factory type 3 was due to the fact that much of the land is abandoned area or still far away from urban areas, public areas, roads and rivers.

**Keywords :** Geographic Information System / Factory placement / Environmental factor