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ANNEXATION STUDIES

Long a source of local political furor, annexation is now a problem that can be solved rationally. Benefits and losses to the city and fringe areas over a given period of time can be fairly well determined. Instead of fear of city domination, county residents are likely to base their views on the probable improvement of services and facilities.

However, one does not annex for financial reasons only, and the intangible aspects may be the ones that tip the balance. A poor fringe area adjacent to a good city may require upgrading to maintain the character of the city itself, even though the process of annexation may be costly to the city for a while.

"What is urban should be municipal," says the League of California Cities. "Annexation is a means for fitting the city line to the area that has become the city or is becoming the city, or that somebody thinks should or might become the city, or that needs to be controlled in order to protect the city," points out the Florida Planning and Zoning Association. For the most part, the rest of the agencies in the country between these two agree.

As urban populations increase, so do annexations. According to the 1958 Municipal Year Book (International City Managers' Association, 1313 East 60th Street, Chicago), cities that annexed territory in 1957 were fairly evenly distributed throughout the various regions of the United States -- except the six New England states. This publication each year reports figures on municipal annexations. Though dips occur in the trend line of number and size of annexations, and total amount of land absorbed, its direction is upward.

Remarkable features of postwar annexations are the number of cities making large acquisitions and the size of some of the annexations. Outstanding are Houston, which in 1949 added 79 square miles; Atlanta, which in 1951 annexed 82 square miles; and Mobile, Alabama, which annexed 76.8 square miles in 1955. The largest annexation in 1957 was to Greensboro, North Carolina -- 28.7 square miles. In 1958 Flagstaff became the second largest city in Arizona by adding 47 square miles to its previous three square miles, and the controversy over the 1956 annexation to Houston of 188 square miles was dropped and the annexation finally approved.

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Municipal government exists to provide services to urban populations and to regulate them in an orderly fashion. But an anomalous city development is that cities are ringed with urban populations that are poorly served and governed. Usually this state of affairs cannot last indefinitely. Sooner or later urban services and facilities are demanded. They may be supplied on a minimum basis by a neighboring municipality, by the county, by special districts, or by a combination of all three.

But again, this arrangement is temporary. The growing population, by far the most of which is centered in the fringe areas, and the rising disparity in cost and quality of urban services between incorporated and unincorporated areas lead inexorably to incorporation or, in a few cases, to county government on a municipal scale.

Some communities in a metropolitan area may choose to set themselves up as independent municipalities. Thus St. Louis is surrounded by 130 small incorporated places, and Chicago by 197, and both by hundreds of special districts and authorities. These are the kinds of situations in which good solutions are despaired of -- short of consolidation and metropolitan federation.

Others may settle for annexation. It is with these urban but unincorporated communities that this report is concerned. At what point in the process from rural to urban is an annexation justified? Of the many variables that make up this process, which can be selected as measures? Collecting facts to answer these and other questions and to determine policy appears to devolve more and more upon planning agencies.

Though annexation problems are discussed in this report in the order that they are likely to be presented to a planning body, determination of policy is a fundamental matter. Cities seem to have to go through a period of experience -- sometimes unfortunate -- before they settle down to a policy that governs all annexations and establishes their views on future growth. Advance annexation planning and policy formulation are part of the approach that characterizes recent studies and are probably the newest developments in the field.

Legislation

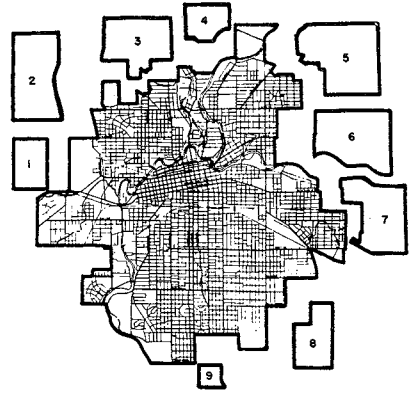
All annexation proceedings are regulated by state laws, the extension of municipal boundaries being viewed as a purely political matter and entirely within the power of the state legislature to regulate. The details of such laws differ considerably among the states. Needless to say, the statute should be fully observed as to exercise of authority, type of territory to be annexed, methods, and procedure.

A summary of judicial interpretations of annexation laws may be found in Chapter 7 of McQuillin's Municipal Corporations.

STUDY AREAS

The first step in an annexation analysis is to designate areas for study. These may be of two kinds: the total area under preliminary consideration, and the study areas into which it is subdivided.

Whether both types of areas are designated or whether study areas only are delineated will depend on the problem as it is presented to the planning staff. If a city decides that it wants to investigate the possibilities of annexations in the entire fringe area, then area-wide studies probably will be made before detailed cost analyses of individual study areas are undertaken. On the other hand, if an annexation petition has been submitted, the investigation may cover only the areas described in the petition.



Unless the situation is limited by petition or by a proposed annexation ordinance, it is probably more advantageous to have the planning staff delineate the areas that seem ready for annexation. Regardless of who draws the boundaries, there is a presumption of readiness. Property owners who petition for annexation make a preliminary judgment that they are de facto urban. A planning staff must make the same judgment, but it is -- or by the time it has completed investigation should be -- better equipped to base judgment on facts. Furthermore a study area whose boundaries are reasonably drawn stands a better chance of being admitted than one that contains an unusual amount of land that will neither be developed in the near future nor is within the financial capacity of the city to service.

In Charleston, West Virginia¹ an area of some 75 square miles was reduced to one 50 miles square after an investigation of topographic conditions, population distribution, and extent of improved roads, water mains, sewers, and other facilities. A more intensive study of the 50-square-mile territory resulted in further reduction to an area that aggregated a little more than 12 square miles. Factors considered in arriving at the final total area were future population, topography, and supply of buildable land. For purposes of detailed study, this area was again divided into study areas.

If a planning commission designates the annexation study areas, the boundaries may be decided without much difficulty on the basis of population density, geographic location, topography, street system, and storm drains or extensions of other municipal services. After boundaries are determined, the study areas are usually numbered or given names. Quite often wide differences in conditions will be encountered among them. For instance, in Charlotte, North Carolina, some areas under study were found to be fully equipped with sanitary sewers and others not at all. Consequently, differences in costs to the city, upon annexation, would result.

¹See bibliography for titles and authors of reports mentioned in text by place names.

Characteristics of Study Areas

Preliminary to making fiscal studies is an investigation of the population and land use characteristics of study areas. Future tax revenues -- upon which feasibility largely rests -- will depend on several variables, among them population size and density, which in turn affect the need for municipal services.

The following types of data relating to the physical characteristics of a study area often are collected.

LAND AREA. Usually reported by study areas, showing acres and square miles and their totals.

POPULATION. Estimates of both present and future ordinarily are given. The figure for future population may be a "saturation" figure or it may be the estimated number of persons for the time period within which a reasonable financial return can be expected from the annexed territory. Depending on the city's responsibility toward schools, estimates of present school age population may be desirable. Distribution and density of the population may be shown by dot map or other device.

BUILDINGS. Number of dwelling units and business and industrial establishments.

STREETS AND ROADS. Number of miles. May be broken down by jurisdiction (state or county) and condition (improved, unimproved, or platted but unopened).

LAND USE. As a rule, land use information collected about prospective annexation areas is general and when compared with typical urban studies, inclined to be sketchy. There is, of course, little justification for spending money on a detailed analysis at this stage of the game. However, enough information about each study area should be assembled to give a picture of the development pattern. The degree to which study areas are urbanized will affect the degree of detail collected and presented. Data may be presented in different ways.

The following are excerpts from two annexation studies. They indicate ways in which this type of information may be presented verbally.

Most of the section has been subdivided and over half the property is developed. The area is generally residential although there is a substantial amount of business and industrial development. Residential construction is brick veneer or frame in the lower medium price range. Future development will likely bring an increase in commercial use with some additional residential development.

* * *

On the western edge of the area is a medium to high value residential district; along the main thoroughfares are

several medium value residential districts; the low value residential districts are located in the eastern and south-eastern sections of the area. There are some small farms in the area, a few estate-size residential properties, and about 2,000 medium to small residential properties. Some commercial development exists and is expanding along the main highways, particularly along the New Troy Pike. As the population increases, it is anticipated that the area along the highway immediately north of the Great Miami River will become a major commercial and service center with secondary commercial development extending northwardly along the highway.

One report (Kansas City) summarizes the general characteristics of the annexation areas by means of a table that contains, among other items, two unusual headings: "Type of development; rate of growth; future prospects" and "Factors influencing desirability of annexation." Two examples of the brief comments appearing consecutively under these headings are:

Residential quality poor, and highest population density. Slow growth.	Needs city control to prevent further blight.
Residences and industry of good quality. Development fast and promises to continue	Needs sewers. Has industrial potential. Contains Westinghouse and Bendix.

In addition to a verbal description, or instead of it, a generalized land use map may be drawn up. The key on the next page is to a land use map in the Charleston, West Virginia report. The uses are given in more detail than they often are on maps. A map has all the advantages that graphics usually have. However, evaluations of future development and pertinent observations may be included in the text without impairing its objectivity.

If by good fortune a study area has been under the control of a zoning ordinance, that fact should be noted, along with the area zoning classifications.

URBAN SERVICES

The basic method of determining annexation feasibility is simple enough, but because so many variables must be taken into account, the actual process sometimes becomes quite complex. Boiled down to essentials, it consists of the following steps:

1. Inventory of extent and quality of urban services and facilities already existing in annexation areas.
2. Quantity to be supplied after annexation.
3. Costs of furnishing needed services.

4. Amount of potential revenue from annexation areas and other sources.

5. Cost balance (excess of costs or excess of revenue).

The number and kinds of services and facilities investigated differ somewhat, though certain ones appear in virtually every study. The following list includes those most commonly found, with services near the top of the list appearing more frequently than those toward the end.

- Fire protection
- Police protection
- Sewage disposal
- Water supply
- Storm drainage
- Refuse and garbage collection and disposal
- Health protection
- Street paving and maintenance
- Schools
- Street lights
- Libraries
- Parks and recreation
- Traffic lights, signs, and markings
- Planning, zoning, and building regulations

Information about the status of services and facilities in annexation areas may be presented in two ways: general statements that describe the fringe area as a whole, and individual study area summaries or data sheets.

General statements consist of descriptions of county, special district, or municipal services, and may include information on service areas and boundaries, policies, rates, deficiencies, costs, and effects of annexation on level of service and costs. The city operating departments are often asked to make reports on the functions for which they would be responsible after annexation. Maps are sometimes prepared to depict conditions.

The second way of presenting information about the present condition of a particular annexation area is to itemize the services and facilities needed in that study area. Data sheets containing summaries of all the pertinent information that figures in making a decision about annexing it are usually made up.




These two methods of presentation are not alternatives, and most annexation reports contain both. The general descriptive statements prepared by operating departments furnish the planning staff with the factual information needed to determine costs in particular study areas. The data sheets summarize the essential information and show the balance of probable future income and expenditures in each area. Examples illustrating both kinds are given in the appendix to this report.

LEGEND




RESIDENTIAL

-  Sparse
-  Moderate
-  Dense




COMMERCIAL

-  Store or service establishment
-  Open air use
-  Recreation






INDUSTRIAL

-  Factory and/or site
-  Open air use
-  Junk yard

INSTITUTIONAL

-  Church, hospital, club
-  Cemetery
-  Private golf course

PUBLIC

-  School -
 -  Elementary
-  Park or recreation area
-  Utility, Water,
Electric substation
-  Airport

Cost Estimates

Determination of the cost of annexing an area is one of the trickiest steps in the entire process. In general, there are two approaches. The first, the one usually used, consists of figuring the cost of each type of service or facility separately and adding all of them to get a total study area cost. The second approach consists of determining how much it costs a city to supply services to particular types of land uses. Since this kind of consideration is tied closely to revenues, it is discussed below under the heading "Cost-Revenue Studies."

Where possible, under the first method, unit costs are used and multiplied by a distance, area, population, or dwelling unit factor, as appropriate. Thus facilities such as fire hydrants and alarm boxes, street lights, sewer pipes, and pavement, for instance, offer relatively little trouble. Others are difficult if not impossible to determine in advance. For example, the number and type of traffic signals and traffic signs at an intersection can only be determined after an engineering study is made of each intersection requiring them. However, a surprising number of facility costs can be estimated. (See other examples in Appendix.)

In some instances, a study area will not immediately support a full "facility unit," and yet the facility will have to be supplied in order to give any service whatever. For example, only half a fire truck or one-quarter of a library may be required, based on a service area or population factor. In estimating financial feasibility, both the ultimate needs and the ability of the city to carry the excess fraction of a unit for a period of time must be calculated.

Some service costs may also be reduced to units or can be prorated. The current cost to homes and businesses of collecting and disposing of refuse and of police protection to an average residential area are examples in which salaries, maintenance, and replacement costs can be estimated on a unit basis. A well-run city that utilizes performance budgeting will have on hand a good deal of information on unit costs for services as well as facilities.

Schools are the largest single cost item, but the burden of supporting them ordinarily will not transfer to the city upon annexation. This will depend on the administrative structure required by each state, but usually schools are operated by independent school districts. Because of this, the effects on the total governmental financial structure may easily be overlooked. It is especially important to time the annexation of an area requiring schools so that taxpayers in the original city are not overwhelmed by the increased taxes -- imposed by two independent taxing bodies.

Costs may be classified in other ways in addition to that indicating whether they are for services or for facilities. These various distinctions are important in estimating revenues and feasibility, though they do not necessarily all enter into actual calculations.

One of the important things to consider is that the city assumes a dual cost responsibility when it takes on new territory. In the first place it must

pay immediate costs for services and public works needed as the area is developed at the time of annexation; in the second place, it takes on an obligation to pay costs as the area develops in the years ahead. "These incurred costs," the Charlotte report points out, "will become just as real as those which are more immediate and calculable."

Another distinction of merit is that between capital expenditures and annual operating expenses. This differentiation aids in future capital improvement programming and isolates fixed and variable factors. In the Denver report, by way of illustration, anticipated expenditures are broken down by "capital expenditures anticipated during first five years" (which includes some non-recurring operating expenses) and "annual operating expenses." In an annexation report made by the city manager of Janesville, Wisconsin, both capital outlay and annual operating costs were figured as immediate and future expenditures for items such as hydrant rental and storm and sanitary sewers.

One investigator claims to have found a useful distinction between costs of services to land, and costs of services to people. George H. Esser, Jr., in two articles called "The Economic Aspects of Annexation" (Public Management, August and September 1957), points out that this type of analysis is the key to determining the feasibility of annexation. Services to land (which he also calls "urban services" and "which become necessary and are provided at a high quality only when land is developed for urban purposes") include water supply and sewers, police and fire protection of a high quality, garbage and refuse collection, paved streets and adequate drainage. In general, the costs of services to land can be based on the benefit theory of taxation "if the property tax is soundly administered and if realistic improvement policies are adopted." Over a period of time, they tend to pay for themselves.

Services to people are required to some extent whether the area they live in is urban in character or not. They include those for public health, welfare, and education, a road system, recreation facilities and programs, public libraries, and courts. Some of these costs will be incurred upon annexation, depending on whether the city has responsibility for these functions or whether they belong to the county or state. Other functions the city may already be providing for itself and the metropolitan area. To generalize again, the articles conclude that the ability of a city to pay for the costs of services to people (which will depend to a large extent on its sources of revenue other than the property tax) will largely determine the financial reasonableness of annexation. Of these services to people, schools cost the most.

Revenue Estimates

Since the property tax is the largest single source of municipal revenue, an analysis of assessed valuations of property in annexation study areas is usually the first step in estimating potential revenues from those localities. Tables showing this kind of information may contain the following items: number of acres of land and assessed valuation; assessed value of improvements; total assessed value. General information on tax rates and policies (such as industrial tax and homestead exemptions, if any) may also be given. Revenue expected from property is shown in dollars and sometimes by yearly increases for five years.

Other sources of general revenue are treated similarly. They may include any of the following, as appropriate: taxes on sales and gross receipts, licenses and other activities; intergovernmental revenue (chiefly state); current charges, interest earnings, special assessments, sale of property. A number of cities charge more for utilities outside the city than in. Particular note of utility revenue losses due to annexation should be taken. (For information on municipal revenues and costs see Compendium of City Government Finances in 1957. U. S. Bureau of the Census; available from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.; \$1.)

Cost Balance

Superficially, the determination of a cost balance is an accounting problem. Assuming that all material has been gathered, a balance will be sought for each study area and for the sum of all study areas. Almost invariably the balance will show as an excess of costs, though an excess of revenues is an occasional possibility. The examples that follow show how findings can be presented in easily read tables. Each is from a different study, as indicated.

FINANCIAL PICTURE FOR FIRST FIVE YEARS

	Area Number			
	1	2	3	4
Capital outlay ^a	\$5,328,000	\$9,294,500	\$330,600	\$2,560,800
Total operating expenses	<u>4,502,000</u>	<u>7,324,800</u>	<u>277,500</u>	<u>2,126,600</u>
Total expenses	\$9,830,000	\$16,619,300	\$558,100	\$4,687,400
Total revenue (all sources)	<u>\$1,658,200</u>	<u>\$ 3,656,800</u>	<u>\$161,700</u>	<u>\$ 989,300</u>
Net deficit	\$8,171,800	\$12,962,500	\$396,400	\$3,698,100

^aIncluding nonrecurring operating expenses.

These figures are on the basis of the assumption that these areas will be predominantly residential in character and that they will be fully developed within five years, in accordance with Denver standards.

(Denver)

COMPARISONS BETWEEN TOTAL COSTS AND REVENUES

Area	Cost of one year normal services plus cost of capital improvements needed	Total estim. revenue (excl. of sinking fund receipts)	Excess of costs over revenues
Green Tree Manor	\$ 10,500*	\$ 15,268	\$ (4,768)*
St. Matthews bus. dist.	20,000*	25,060	(5,060)*
St. Matthews san. dist.	596,383	245,332	351,051
Camp Taylor area	739,671	356,968	382,703
Rubbertown	909,622	241,041	668,581
Totals	\$2,276,176	\$883,669	\$1,392,507

[*Exclusive of any fire department costs, whose determination awaits decision on concurrent annexation of two areas.]

(Louisville)

Financial effects of annexation. Along with the calculations just described, it is necessary to take into account changes in the financial picture that will occur after annexation. For instance, if the area is almost entirely residential, the revenue from property taxes will probably be insufficient to carry the load. If the city annexes this territory, it may be required to raise the property tax rate throughout the entire city in order to provide the necessary funds. This solution, needless to say, is unpopular and somewhat unfair to city dwellers who have already paid for the urban services they are receiving.

Other variable factors that must be considered are the effect on the city's taxable valuation and consequent ability to issue additional bonds for the construction of capital improvements; time lags between conclusion of annexation and start of revenue²; the possibility of greater costs in the future if annexation is delayed; the effects of scheduling capital investments over a period of years; changes in school costs that might occur from redistricting; and the financial status of existing special districts in the county.

Cost-Revenue Studies

The studies that have been discussed up to this point consider particular areas. In contrast, the type of analysis that is known as a "cost-revenue study" assesses the cost of municipal services to different types of land uses and the revenues from them -- though the aim may also be to determine the fiscal aspect of a study area. A cost-revenue study is not a means of

²This factor is particularly important for small cities to consider, and especially if the territory is large in relation to the size of the city. It takes a year or 18 months for revenue to start coming in from newly annexed lands. If boundaries are over-extended, the city may be left without money to operate on and be forced to issue tax anticipation warrants -- an expensive proposition at an interest rate of 6 to 7 per cent.

SUMMARY SHEET OF THE FINANCIAL ASPECTS OF ANNEXATION

	1951	1952	1953	1954	1955
<u>KNOBHILL</u>					
Gen. prop. tax	---	\$27,680	\$31,020	\$34,360	\$37,700
Licenses & fees	\$12,570	12,570	12,570	12,570	12,570
Total revenue	12,570	40,250	43,590	46,930	50,270
Total costs	72,300	69,500	67,100	63,600	63,550
Annual deficiency	59,730	29,250	23,510	16,670	13,280
Equivalent in mill levy	1.38	0.62	0.46	0.30	0.22
 <u>ROSWELL - NORTH END</u>					
Gen. prop. tax	---	\$10,460	\$10,720	\$10,970	\$11,240
Licenses & fees	\$ 6,090	6,090	6,090	6,090	6,090
Total revenue	6,090	16,550	16,810	17,060	17,330
Total costs	46,500	44,400	44,400	42,700	42,700
Annual deficiency	40,410	28,850	27,590	25,640	25,370
Equivalent in mill levy	0.97	0.66	0.60	0.54	0.49
 <u>ROSWELL</u>					
Gen. prop. tax	---	\$ 2,450	\$ 2,620	\$ 2,800	\$ 2,900
Licenses & fees	\$ 1,340	1,340	1,340	1,340	1,340
Total revenue	1,340	3,790	3,960	4,140	4,310
Total costs	27,100	25,400	25,400	24,500	24,500
Annual deficiency	25,760	22,950	21,440	20,360	20,190
Equivalent in mill levy	0.62	0.53	0.47	0.43	0.40
 <u>IVYWILD - CHEY. CANYON</u>					
Gen. prop. tax	---	\$37,540	\$39,330	\$41,120	\$42,910
Licenses & fees	\$12,910	12,910	12,910	12,910	12,910
Total revenue	12,910	50,450	52,240	54,030	55,820
Total costs	67,500	64,600	63,300	59,900	59,900
Annual deficiency	54,590	14,150	11,060	5,870	4,080
Equivalent in mill levy	1.24	0.31	0.23	0.12	0.08

SOURCE: Compilations based upon estimates provided by department heads, Colorado Springs, March 1950.

fixing financial responsibility, but rather a "device for determining the incidence of governmental costs that can be specifically identified with the demands of property." (See bibliography, Are New Residential Areas a Tax Liability?)

In addition to these differences, cost-revenue studies also differ in methodology: (1) they seek statistical descriptions of the multiple variables that affect costs and revenues; and (2) they apply those descriptions to the areas in question. Though typical annexation analyses utilize unit costs where possible, the cost-revenue approach attempts to develop actual standards.

Possibly because of the investigations made by the Institute of Government at the University of North Carolina, most of the cost-revenue studies directed toward annexation feasibility that have appeared so far have come from North Carolina cities (see bibliography). Readers interested in applying this method to their own annexation problems will want to study the reports directly. Their chief limitation for other cities is that school costs are not included, since in North Carolina they are borne by the state. However, the following tabulation will give some idea of the approach used. In it, examples of three urban governmental activities are extracted from different tables in the two Greensboro reports and combined to show the possible application of "standard units" to residential developments of varying densities.

COST MEASUREMENT OF RESIDENTIAL AREA ACTIVITIES
(Greensboro Case Study Subdivisions)

	Police patrolling	Fire alarm boxes	Street paving
Activity performed by	City	City	Contract
Self-supporting	Assessment (partial)
Unit of activity	Patrol car beat	box	street-mile
Unit of cost*	\$51,264	\$155	\$22,295 ^a
Unit of finance	Operating	Capital	Revolving
Unit of time	Annual	30 years	15 years
Unit of incidence	15,000 people	box	street-mile
Residential portion	50%	100%	100%
Unit of residential cost	\$25,632	\$155	\$22,295
Incidence in subdivisions			
-- Minimum lot size (in square feet)			
6,000	3,506 people	12 boxes	39,450 feet
9,000	2,659 people	10 boxes	38,107 feet
18,000	1,339 people	8 boxes	28,047 feet
36,000	769 people	9 boxes	22,437 feet

*Includes apportioned cost of supplementary activities.

^aCity's share of cost.

Other cost-revenue studies not aimed particularly at considerations of annexation are also listed in the bibliography. One of the most elaborate in technique is Municipal Costs and Revenues Resulting from Community Growth by Walter Isard and Robert Coughlin. Activities and functions that generate costs and revenues are investigated for hypothetical communities of different types and at different levels of service. If properly and accurately made, cost-revenue studies can be invaluable aids in long-range annexation planning.

ANNEXATION PLANNING

In a practical situation, the problem of annexation usually is presented to a planning agency in the form of a specific proposal, as we have seen. In these circumstances, the approach to a solution is often unavoidably shortsighted and narrow in scope. Under it, study areas can be viewed for their urban characteristics and their economic value and risk, but, without a plan, not for their place in the growing urban region nor for their long-range importance to the city proper.

Because urban growth takes place on the fringes, because vacant land within corporate boundaries becomes scarce or nonexistent, and because taxable values move outside along with people and business and industry, city governments may find themselves faced with a declining economic base. This phenomenon is, of course, well known. But when considered in relation to the problem of annexation, it emphasizes the need for going a step beyond the one that is usually taken.

Granted that county areas in exceptional cases are willing to remain unincorporated indefinitely, as a general rule the stresses of growth upset the balance. If annexation (or its usual alternative, incorporation) is all but inevitable, the trick is to decide at what point in the process of change from rural to urban the municipality should "take over." If a city waits for a petition from the area wanting annexation -- as it may have to do under unfavorable legislation -- its choice is limited. Furthermore, it may get what is in many ways a bad deal, even though the financial venture seems reasonable. Substandard subdivision development, poor street design and pavement, and inadequate zoning controls all mean that the territory annexed is below par. Furthermore, the area may be almost entirely built up or may otherwise lack industrial potential that will enlarge the city's tax base.

Ideally, then, a city should annex urban land when it is able to do so financially and when, at the same time, it can regulate development advantageously. When that time arrives can be determined only if the city planning agency has kept track of development, and if a course of action has been decided on.

The way to do this, of course, is to make the same kind of studies for the fringe areas as are made for the city proper. Or rather, to include those fringe areas in master plan studies when they are being made for the city. In other words, planning should be undertaken on an urban-wide basis regardless of municipal boundaries.

As various cost-revenue studies point out, residential properties are much less likely than industrial properties to support the cost of urban services. In some cases, industrial properties in effect "subsidize" the cost of urban services to residential properties.³ Consequently it is not enough to simply predict the future amount, density, and distribution of the fringe population on the basis of current trends. The primary step is an economic survey of

³The value of accounting for cost and revenue by type of land use is that it shows the importance of having a proper balance of business and industry along with residences.

the entire urban area, since amount and rate of population growth are tied directly to the growth of industry or other forms of economic base.

After having made an economic survey and a population projection, preparation of a general land use plan for the fringe areas is the next step. Development at controlled densities should be indicated, since density is an important factor in the cost of municipal services. Also, provision for industry and other high revenue producing land uses should be made. Unless this is done, the best industrial lands, which otherwise might help support new residential growth, may be developed for dwellings instead. And new factories, instead of locating within an annexable area in which the city can tax them, may be forced to a location where annexation is not feasible for some time.

Thus in addition to determining financial feasibility of annexation, other factors must be considered when deciding on the advisability of annexation. On the one hand, a city does not want to over-extend its boundaries to the point where demands for services and facilities will drain its coffers. On the other, it should not annex piecemeal and after-the-fact when opportunity for beneficial guidance of land development has all but passed.

Criteria are needed, therefore, to help establish the proper time for annexation. The following statements (combined from several given in the Charleston and Fort Wayne reports) describe the general outlines of a preliminary guiding rule:

1. The area must be contiguous to the city.⁴
2. It must have "a unity of interests with the municipality" and be "really a part of it."
3. It must have enough people at a density sufficient to warrant the extension of services.
4. The deficit of income against expense to the city must not be unreasonable.
5. The advantages both to the city and to the area must outweigh the disadvantages.
6. The city must be willing and able to provide services to the newly annexed area within a reasonable time.

With the data collected as a result of an inventory, other types of criteria can be developed and shown in terms that can to some extent help predict the need for future expenditures. The report called Greensboro Suburban Analysis offers a way of using "service need indicators," which can, in turn, be combined to form a measure of annexation "readiness." The information is presented in the following way:

⁴This criterion is usually defined in state legislation, where other conditions are also set out.

Cities Try "Prezoning"

"Prezoning," under which a city establishes land uses for areas adjacent to it but outside its borders that may some day be annexed, is being tried in Glendora, California and Carleton, Michigan.

All the device does is set up zones for unincorporated land outside the city limits; the city has no power to enforce the zoning unless the area is annexed. Glendora, however, "prezoned" adjacent land under the same procedures used for zoning within the city: proper legal notice was given, a public hearing was held before the planning commission, and protests against the proposed land uses were heard. (As a result of the protests, changes were made in the zoning.

The plan has several advantages.

First, it permits petitioners who are seeking annexation to know exactly what uses they can put their property to when it becomes a part of the city. Second, city officials are relieved of demands for annexation on special zoning terms and requests for land uses that are unsuitable. Third, it protects neighbors who live next to an area that is being annexed, because they know in advance the kinds of uses to which the annexed land can be put.

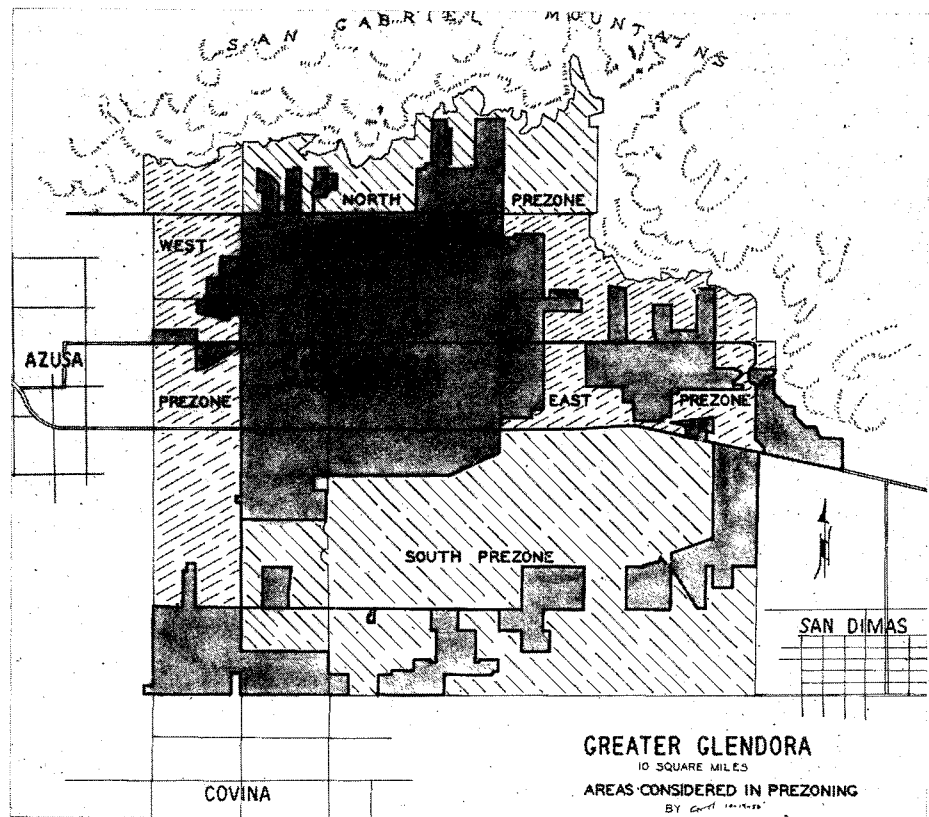
Glendora used as its authority to make studies and prepare plans for land outside its boundaries Section 65460 of Article 7, Chapter 1 of the California conservation and planning law:

"Each commission or planning department shall prepare and the commission shall adopt a comprehensive, long-term general plan for the physical

development of the city, county, or region, *and of any land outside its boundaries which in the commission judgment bears relation to its planning. . . .*" [Editor's italics]

Carleton, Michigan, which drafted its first zoning ordinance in 1956, is a city a mile square. Considerable territory outside the city limits was "prezoned" under the ordinance. For instance, on the land use map for the greater Carleton area there is provision for a general industrial district and a shopping center district outside the present limits of the city. Both districts are described in detail in the zoning ordinance.

Carleton city officials hope that either the areas "prezoned" will be annexed by the city; or the township will apply to the unincorporated areas the city's zoning.



City limits are shown by shading; prezoned areas by crosshatching. Together they constitute the ultimate area of the city.

Santa Rosa, California (according to an article in Western City for August 1957, "How 'The City Designed for Living' Organized to Meet the Fringe Growth"), having determined that it was in the public interest and welfare to annex the "urban and suburban territory" of Santa Rosa, formed a huge assessment district that included all of the areas already within the city limits plus areas that would be annexed in the future. To protect the existing city, the council pledged that no utility service would be extended to any area until it first annexed to Santa Rosa and that no portion of any bond issues would be sold to build utility services in those areas until they had been annexed.








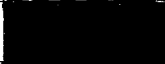






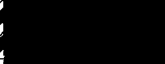
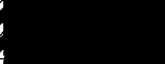











A similar policy was adopted by resolution of the Colorado Springs, Colorado city council in 1954. In brief, the various parts of the policy are:

1. Wherever annexation of an area is possible and desirable, annexation will be required before water and sewer services are extended to the area.
2. Where annexation is desirable, but not immediately possible, the developer may contract for sewer or water services until annexation becomes possible. Since this action contemplates future annexation, the contract shall require the builder to comply with city ordinances concerning: subdivisions, zoning, construction; fire safety, health, and other applicable matters.
3. Rates for services outside the city shall be increased to reflect true costs, though rates inside the city will be kept far enough below cost to insure that the areas developed under paragraph 2 above will apply for annexation as soon as possible.

Eight more paragraphs follow, dealing with areas already developed; programming of public improvements; procedures; and policy toward areas within school districts. Industrial users are exempt from the policy.

Springfield, Illinois decided in 1955 to refuse water main extensions to contiguous fringe areas until they had become incorporated into Springfield. Extensions to noncontiguous territory may be withheld until the area in between becomes part of the city. Water rates and fire protection charges were boosted to out-of-city users who refused to become a part of the city. How this policy has worked out has not been reported. However, if the fringe area builds its own water plant and becomes independent of the city's supply, it will then be in a stronger position to resist annexation -- if that is its intention.

The same year, the Fort Wayne, Indiana council adopted a resolution declaring that its policy was to extend no water or sewer service to outside areas unless binding written commitments assuring the city of "unimpeded immediate or future annexation of the territory served by such water or sewer service" have been received by the city. On application for installation of water service, property owners sign a waiver of right to remonstrate or otherwise

Area	High density residential area		Major indus. or comm. uses		In city drainage area	Sanitation problem	Need for sewers		Need for water	
	Now	By 1970	Now	By 1970	Now	Now	Now	By 1970	Now	By 1970
1										
#2										
#3										
#4							now	served	now	served
#5										
6										
7								?		?

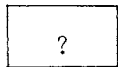
Legend:



Situation exists or will exist



Situation exists or will exist in part of area



Situation may develop in future

-- Those areas that in whole or in part require municipal services now.

Though the presentation is rough and only approximate, by reading across the table it can be seen which areas apparently now need municipal services and which will need them in the future. Thus an area that at present is a "high density residential area" possesses a convincing criterion of annexability.

If the information gathered for an annexation planning study is accurate and detailed enough, it is possible to develop a long-range annexation plan. Paul W. Philips, Fort Wayne city attorney, in speaking before the Governor's Conference on Urban Area Problems at Indiana University, May 25-27, 1958, suggested that such a plan "should include definite projections of how and when each municipal service can and will be extended. Specific lines of expectation should be drawn and programs for financing the same made and included in the budget." He also recommends that the plan should be made public and that it should be adopted by the city council, even though prepared by the planning commission, "since annexation is a legislative matter."

ANNEXATION POLICIES

A city making a decision on whether to annex must necessarily rely on the types of factual studies that have been discussed in the previous pages. However, having gone through the process a few times, it may be able to generalize from that experience and develop principles to guide its future actions. These, in turn, will aid future decision making and will advise all concerned what a city will and will not do and under what conditions.

One of the values in developing an annexation policy is that it forces a government to stop and think a bit about the future size and shape of the city and its position in a metropolitan area. The questions of optimum city size and of alternatives to annexation -- such as metropolitan federation or satellite incorporation -- may for the first time be thought of as practical matters for the future.

The first policy determination is whether the city wants to encourage annexation as an alternative to encirclement by corporate governments. Other policies are described in the pages that follow. Of growing importance is a policy on industrial lands: annexation of strategically located but undeveloped land, annexation of land on which established industries are located, and consideration of extensions of service to large-scale developments.

Policies ordinarily are adopted by resolution of the city council, though occasionally by ordinance. Procedures may be outlined in the resolution or ordinance, or they may be formulated by the planning department.

Zoning

The usual practice upon acquiring new territory is to place it in the most restrictive residential zone provided for by the city zoning ordinance. This classification is temporary, and the zoning provision usually so states. It is desirable to establish a time limit on this temporary classification. From two to six months ordinarily is specified, although the interval should be long enough to permit the planning commission to do a thorough job in making land use studies and recommendations for permanent zoning classifications.

A new device -- which places conditions upon the territory to be annexed -- has been called "prezoning." Under this system, zones are established that will take effect if the territory is annexed. How it works was described in the ASPO NEWSLETTER for November 1957, as shown on the opposite page.

Utility Extensions

In order to provide municipal services to outlying areas, cities in many localities have followed the practice of selling or renting a variety of services on a public utility basis. Since this practice has on many occasions reduced the incentive for annexation, some cities have adopted a policy of prohibiting or limiting utilities and services to outside areas unless they agree to annex.

oppose any pending or future annexations of that territory. Possible legal difficulties raised by this procedure have not been resolved, so far as we know.

Capital Recovery Fees

Cities in California and Colorado are permitted under state legislation to charge a fee to offset the cost of making capital improvements in new territory. The fee may be based on acres or residential lots. Beverly Hills, California and Denver charge \$2,000 an acre, though charges may be as low as \$300 an acre in some cities (Riverside, California).

The city of Merced in 1956 sent out questionnaires to other California cities to determine what charges were being made. One purpose was to find out whether annexation fees were being applied to public schools, parochial schools, and public and semi-public property in areas being annexed. Merced decided to charge \$650 per gross acre. The fee is broken down in the following way:

<u>Purpose</u>	<u>Cost</u>	<u>Fund</u>
Major sewage trunk lines and drainage structures	\$450	Capital reserve fund, marked for this purpose only
Parks and recreation facilities	\$100	Recreation and parks capital outlay reserve
General annexation charge	\$100	General fund

In order to provide schools with adequate sewage and drainage facilities brought to their property lines it costs the city about \$450 an acre. Therefore, since this amount would otherwise have to be paid by taxpayers as a whole, the city council believed that it was fair to charge all schools \$450 an acre. Arrangements may be made to pay the fee in installments over a five-year period.

For properties that do not annex voluntarily and against which state law does not permit the imposition of a fee, Merced requires a sewer connection charge in lieu of the annexation payment. The minimum is \$125 for any connection. This is in addition to the actual cost of installing a lateral from the property to the sewer -- a cost borne by the property owner.

In Santa Clara, California it was found that since county subdivision regulations require the developer to install all improvements (sewer and water lines, street paving, curbs, gutters, sidewalks, street lighting, street name signs, and other facilities, totaling on the average \$1,030 a residential lot), the annexation fee could be limited to the amount needed to cover administrative costs, storm sewers, and new recreation sites. The schedule is as follows: annexation fees of \$50 for up to two acres, \$100 for two to five acres; \$250 for large annexations, plus \$25 a lot for recreation site acquisition, plus \$50 a lot subdivided for off-site storm sewer construction.

The Denver Policy

In many respects, conditions leading to the present annexation policy adopted by Denver epitomize the situation numerous other cities find themselves in. In one of the three reports on the Denver annexation policies (see bibliography) the circumstances that caused the adoption of the new policy are outlined in the following way:

- (1) Denver's inability, under state law, to control suburban standards or to pre-plan any annexations;
- (2) absence of an organized metropolitan plan to guide new growth and provide public facilities;
- (3) absence of a metropolitan fiscal system for supporting essential urban facilities in fringe areas;
- (4) rapidity of population increase and the consequent rush of fringe land promotion and annexation on a piecemeal basis;
- (5) Denver's former easy-going utility extensions and annexations, which allowed the start of vast and sometimes sub-standard fringe developments, brought about untenable annexation boundaries and six islands of county territory completely surrounded by the city, a saturated sanitary sewer system, and a very large water engineering obligation;
- (6) heavy demand for public schools, fire protection, recreation and other direct services for the growing families which occupy most of the new housing, both inside and outside the city;
- (7) Denver's present fiscal predicament and virtual exhaustion of capital improvement funds due to the demands of large-scale municipal construction of all types since the war;
- (8) eventual realization by Denver of the magnitude of capital outlays required for new education plant, protection plant, sanitary plant, recreation and traffic engineering to support new annexations and outside suburbs, and further realization that these outlays are not recoverable from the residential taxes since these taxes are not even sufficient to meet annual operating costs of these plants;
- (9) administrative practicability of the limited 1953 policy.

[This policy required that 8 per cent of an annexation area or equivalent in money be donated for public sites. Though successful, it did not solve the problem of paying for capital improvements.]

After considerable study by the Denver Planning Board's annexation committee -- which held 29 meetings and hearings during a ten-month period -- a comprehensive policy was recommended. An ordinance relating to annexations, suburban extension of municipal utilities, and regional planning was adopted in 1956, of which the following excerpt is a summary:

Summary of Annexation Provisions of Chapter 670

The general policy of the City and County of Denver with respect to annexation is declared to be as follows:

1. To annex enclaves (areas entirely surrounded by Denver territory) and to annex land where it is clearly desirable to square out and maintain regular boundaries.
2. To annex territory only for positive reasons where such annexations would be equitable to the City and County of Denver.
3. To annex only land which can be served with municipal utilities and other services from the Denver system more easily than from other sources.
4. To annex territory of adequate size for efficient planning and installation of public facilities.
5. To annex land only if the following payments and public site donations, or equivalent payment, are made to the City and County of Denver:
 - a. Eight percent (8%) of the total area of the annexing territory, the choice of donated sites to be made by the City, after studying the needs and geographic development possibilities for public facilities such as schools, parks, fire stations. If the City does not require sites within the annexation area, the annexors may pay cash equal to eight percent (8%) of the value of the territory immediately following annexation. The appraisal to determine value after annexation would be made by an independent appraiser selected by the Denver Planning Office. The persons desiring annexation would pay the fee for such appraisal.
 - b. In addition to the required public site donation of eight percent (8%), or cash value thereof, the City requires a capital improvement fee, which has been set at two thousand dollars (\$2,000) per acre of the annexing area, in the case of residential land. The area donated for public sites would be exempted from the capital improvement fee. Those portions of the annexing territory recommended by the Denver Planning Office for commercial or industrial development, and those portions of the annexing territory exempt from general ad valorem taxation

would not be covered by the standard capital improvement fee requirement but would be subject to a special study to determine requirements and conditions to be made.

CONCLUSIONS

Though annexation is never a cut and dried proposition, whether to annex is more and more frequently decided on the basis of factual studies. However, important as these are in establishing a basis for annexation, they are not the only considerations. And in spite of what shows up as an excess of costs over revenues, a city may decide that in the long run it pays to annex for other than monetary reasons.

If it is a foregone conclusion --and it usually is -- that future population growth will take place on the urban fringe, the city must decide at what point it is advantageous to annex. In making recommendations the planning agency must think about the quality and quantity of land available to meet future land use requirements. In considering quality it must think in terms of governmental controls to regulate land use and construction. In considering quantity it must think of acreage for industry as well as residents. And as a practical matter, it must consider the city's physical as well as financial ability to supply municipal services and facilities.

A general political theory is that urbanized areas should be governed by bodies capable of handling urban operations. That is, the local government in urban areas should be set up to handle urban, not rural, functions. On the whole, these functions are carried out most economically and satisfactorily under city rule -- as annexation studies bear out. Nevertheless, there are situations in which county governments have effectively taken over municipal functions. (See "Urban Counties," by Victor Jones, The Municipal Year Book, 1954. Chicago: International City Managers' Association, 1313 East 60th Street.) Though strong urban county governmental units seem to be increasing, they are still the exception, and the vast majority of cities find themselves surrounded by poorly governed unincorporated areas.

Nevertheless, the laws of many states make it difficult to extend corporate boundaries to include areas that should be within them. The result is that the city may eventually fall heir to poorly planned and developed neighborhoods toward which it must fulfill certain responsibilities. Though tax revenue is increased by acquisition of territories such as these, they do not necessarily add more than relative wealth to the city as a whole. And they may, by fait accompli, determine the priority of capital expenditures.

In the welter of discussion about metropolitan government and planning, annexation is put forward as one solution out of many that should be studied. Similarly recommended as a partial solution is consolidation of municipalities and of other governmental units, such as special districts and authorities. But as the years go by and steps toward metropolitan government progress only slowly, countless acres are being transformed from farm to city without benefit of city government. Apparently needed in many cases is improved legislation to permit cities to extend boundaries when desirable and to impose capital recovery fees to pay for the costs of doing so. These measures, together with long-range annexation planning on a wider scale would result in better local government and would assist future metropolitan government.

Bibliography

Many studies have been published on the various aspects of annexation. The first part of the following brief bibliography lists some of the reports, published mainly by planning commissions, that thoroughly go into the investigations necessary to decide on annexation. The second part lists several cost-revenue studies.

* * *

Charleston. ANNEXATION STUDY. John W. Snaden. Municipal Planning Commission, Charleston, West Virginia. 1956. 47 pp.

Charlotte. ANNEXATION FOR CHARLOTTE. Charlotte-Mecklenburg Planning Commission, North Carolina. 1956. 60 pp.

Colorado Springs. ANNEXATION STUDY -- A Factual Report on Annexation for the Metropolitan Area of Colorado Springs. Joseph E. Chamberlin. City of Colorado Springs. 1950. 92 pp., append. \$1.

Dayton. ANNEXATION STUDY: DAYTON METROPOLITAN AREA. City Plan Board, Municipal Building, Room 530, Dayton, Ohio. 1946. 73 pp., append.

Denver. SPECIAL ANNEXATION STUDY. Denver Planning Office. 1951. 12 pp., append.

Policy Reports: ANNEXATION POLICY RECOMMENDATIONS BY PLANNING BOARD. 1956. 25 pp.; DENVER'S NEW POLICY ON FRINGE AREAS AND ANNEXATION. 1957. 6 pp.; ANNEXATION GUIDE -- A Digest of Information about Denver's Rules and Regulations for Annexation. 1957. 5 pp.

Durham. REVENUES AND SERVICE COSTS FOR GENERAL FUND ACTIVITIES: A SPECIAL REPORT ON ANNEXATION FOR THE CITY OF DURHAM. Institute of Government, University of North Carolina, Chapel Hill, and Planning Department, City of Durham, North Carolina. 1957. 28 pp. 50 cents.

Fort Wayne. ANNEXATION STUDY. City Plan Commission, Fort Wayne, Indiana. About 1952. Unpaged.

Kansas City. ANNEXATION FOR KANSAS CITY, MISSOURI. City Plan Commission. 1954. 70 pp.

Lexington. GREATER LEXINGTON -- WHAT WILL YOU MAKE IT? Greater Lexington Committee, A Citizens' Committee of Lexington and Fayette County, Kentucky. 1955. 223 pp.

Louisville. LOUISVILLE'S ANNEXATION PROGRAM. Roy H. Owsley, Consultant. City of Louisville. 1950. 33 pp., append.

Shelbyville. ANNEXATION STUDY. Kenneth L. Schellie and Associates, Consultants. Shelbyville City Plan Commission. 1952. 49 pp.

* * *

ANNEXATION ANALYSIS -- A Preliminary Report on Cost-Revenue Aspects of Annexation. Department of Planning, High Point, North Carolina. 1958. 35 pp.

ARE NEW RESIDENTIAL AREAS A TAX LIABILITY? -- A Report to the Greensboro City Council Concerning the Financial Impact of Annexing Subdivisions. George H. Esser, Jr. Institute of Government, University of North Carolina, Chapel Hill. 1956. 30 pp. \$1.

THE COST OF MUNICIPAL SERVICES IN RESIDENTIAL AREAS. William L. C. Wheaton and Morton J. Schussheim. Department of Commerce, Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 1955. 105 pp. \$2.

GREENSBORO SUBURBAN ANALYSIS. George H. Esser, Jr., Ruth L. Mace, and Dave McCallum. Institute of Government, University of North Carolina, Chapel Hill. 1956. 197 pp. \$3.

GROWING SUBURBS AND TOWN FINANCE -- A Study of the Effect of Suburban Growth on Property Tax Expenditures in Four Connecticut Towns. Beldon H. Schaffer, Institute of Public Service, University of Connecticut. 1954. 29 pp., append. 25 cents.

MUNICIPAL COSTS AND REVENUES RESULTING FROM COMMUNITY GROWTH. Walter Isard and Robert Coughlin. Chandler-Davis Publishing Co., Wellesley, Massachusetts. 1957. 111 pp.

SALINE COMMUNITY AREA -- ECONOMIC ANALYSIS OF LAND USE AND GOVERNMENTAL SERVICES. Washtenaw County Planning Commission, Ann Arbor, Michigan. 1956. 83 pp., append.

Appendix

Each of the departments of the city government listed below submitted a report pertaining to their particular service. The following is a summarization of those reports, together with a more detailed summarization, of the six basic civil city services for each of the areas involved.

WATER

The study of annexation as it affects the City Water Utility presents two questions. First, can the present or future expanded plant produce and deliver the necessary water and, secondly, will the cost of main extensions and services be economically feasible? The obvious answer to the first question is "yes," barring the occurrence of a hot dry period of long duration before the present expansion program is completed in July 1954.

Consideration of the second question presents a more involved solution. In the nine areas under discussion there are a total of 2,341 units (a unit is used to designate one minimum water user of 500 cubic feet per month or one family - 3.1 persons per family unit). Of this total 1,029 are present users and 1,312 are prospective future users. The prospective future users are assumed as presently being supplied with water from some private source but not necessarily a satisfactory one in all cases. Several of this last group have contacted the Utility for water service. The remainder of these prospective users will become more interested as trouble develops with their wells in the years ahead.

Main extensions become profitable when a density of approximately one house per fifty feet on each side of the main is reached. In the present manner of main extensions the customer pays for the material and the Water Utility pays for the labor. After the customer has paid his first monthly water bill he receives a \$40.00 refund as a further credit for his part of the construction. The present costs are approximately \$2.60 per lineal foot or \$1.30 per customer and \$1.00 per lineal foot for the Water Utilities for a 6-inch main. Under this system the income from a fully utilized main will amortize the construction costs in approximately seven and one-half years.

Some mains do exist in and/or contiguous to each of the nine areas with Area No.1 having the least. Areas No. 4, 5 and 8 have pronounced and orderly developments of sufficient density to be considered profitable. Few other developments of sufficient density and nearness to present mains exist in the areas under consideration to become a profitable venture unless greater customer participation can be had.

Suburban living, scattered as it is, and the trend to wider lots for ranch type houses makes the development of a formula for main extensions practically impossible. Unpredictable conditions for each specific project can be written into future contracts as an advantage in many cases. As an example, when a 6-inch diameter main is usually the minimum size installed and if the usage indicates a larger size, then the large main should be at the customer's cost. But if wise planning calls for a still larger line to

Source: Annexation Study. City Planning Commission, Fort Wayne, Indiana. 1952.

serve as a transmission main, then the Water Utility should continue to assume the additional cost for this installation.

SEWER

Area No.1, portions of Areas No.2 and 3 and Area No.7 are within the design scope of existing facilities, sewer outfalls and/or treatment. Providing sanitary, storm and industrial sewage outlets for Areas No.2 to 6 inclusive will require additional sewage treatment facilities for approximately 9,728,000 gallons per day. The present plant capacity is 24,000,000 gallons per day.

In the discussion which follows, the problem of storm drainage will be considered as one that the city would assume both as to engineering and construction, while that of sanitary sewage is a problem for the residents to solve by circulation of petitions, approval by the governing body to extend services and the entire cost to be born by residents themselves for the areas only. The outfall sewers to which all storm and sanitary sewage would be connected from annexed areas should be provided by the city. All estimates reflect an engineer's preliminary cost as of September 1952.

FIRE

Fire companies should be so located as to provide adequately the number of companies necessary for handling serious fires. It is also necessary that sufficient companies be available to handle simultaneous fires. To provide for quick response of the first due company, no point in the high value district should be more than three-fourths of a mile from a pumper, hose or pumper - ladder company nor more than one mile from one providing ladder company service. In residential areas the requirements are one and one-half miles and two miles respectively for closely builtup sections and up to three miles for either engine or ladder service in areas where buildings are scattered.

With the growth of the city by annexation the present number of men and fire stations would be below the standards set forth above. Basing the needs of fire protection on the density of population and on the area to be served, it is recommended that four additional stations be provided. One each in the northwestern, northeastern, eastern and southern sections of the area proposed for annexation.

At the present time the city is served by two rescue units, each serving approximately one-half of the city's area. These rescue units carry special tools and equipment so necessary in modern fire control. With the additional areas added, it would necessitate another rescue unit which could serve all of the area north of the rivers. This would relieve the present rescue units of their northern coverage. The other areas to the east and south could then be serviced by the present rescue units.

On the basis of the present 72-hour work week a total of 64 additional men would be required to operate the recommended facilities.

POLICE

It is estimated that 10.4 police officers would be required for each additional one square mile of area added to the city. This would require an annual appropriation of \$39,462.00 for additional salaries for each one square mile of area added.

It is estimated that 1.4 squad cars would be needed for each one square mile of area added to the city. The annual cost of operation and depreciation per squad car is \$2,648.00. One squad car, fully equipped, represents an investment of \$2,550.00.

GARBAGE COLLECTION

The garbage collection contract now in effect provides that the city shall pay \$7.72 per dwelling unit per year for each unit added. In all probability this rate could not be extended to cover the entire area proposed for annexation because of the low density of population.

STREETS

The estimated annual maintenance cost for low-type pavement streets is approximately \$1500 per mile. The cost of paving residential streets is assessed against the abutting property owners and no attempt has been made for this report to estimate the possible cost to the city for its share of improving major thoroughfares.

LIGHT

The City Light Utility is now supplying approximately 30% of the area proposed for annexation and the complete area is now served by either City Light or by Indiana Michigan.

The major effect of annexation upon the City Light Utility would be that of street lighting. It is estimated that if these areas were annexed, the Board of Public Works would be requested to install at least 275 street lights at an approximate cost of \$45,000.00. The billed rental of the 275 street lights would be between ten and twelve thousand dollars annually. These charges at the present time are absorbed by the City Utilities. If the areas were extensively developed it would cost approximately \$250,000.00 to install the street lighting required.

SIGNAL SYSTEM

It is estimated that 199 fire alarm boxes and 39 police signal boxes would be required to serve the area proposed for annexation. The following is a summarization of the estimated cost of construction and annual maintenance.

New construction:	Fire alarm boxes and construction -	\$64,593.00
	Police signal boxes and construction -	\$67,650.00
	Traffic signals and construction -	\$8,400.00
	Total -	\$140,643.00

Additional annual maintenance cost: Personnel - \$14,076.00
Equipment and supplies - \$4,932.00
Total - \$19,008.00

HEALTH

The proposed annexation would have no major effect upon the Board of Health. At present the Board provides milk and meat inspection for the city and the added areas would require one or possibly two additional sanitary officers. The item of primary concern to the Board of Health would be the sanitary conditions within these areas. Water supply and sewage disposal are two problems which most vitally affect health and the provision of these facilities must be satisfactory in order not to menace the health of the residents of the city and of the area proposed for annexation.

PARKS

Many residents of the fringe areas are now making use of the city park facilities. As an example, a survey was conducted in which each person who came to one of the swimming pools was asked whether he lived inside or outside of the city. The results of this survey showed that 20% lived outside of the corporation limits.

At the present time two of the major city parks, Franke Park and McMillen Park, are located outside of the corporate limits and are included as parts of Areas No.3 and 8.

Annexation of the proposed areas presents the problem of extending the city playground program into those areas having a high population density. This would require the acquisition of playground sites and the appropriation of additional operating funds.

SCHOOLS

The present school cost for each high school pupil is approximately \$310.00 per year and \$205.00 per year for each elementary school pupil. This is an average cost of approximately \$250.00 per year per pupil.

The School City now receives approximately \$35,000 per year from Washington Township for tuition and approximately \$14,425.00 per year from St. Joseph Township. If the areas located in these townships were annexed, the tuition costs would be eliminated.

The Lincoln School is located in Area No.2. If the area is annexed the value in relation to the total evaluation would be paid by the city. The assessed land and improvement value of the school is \$70,750.00 and Mr. Abbett estimated the value of the school at approximately \$280,000. In addition to the above costs the city would have to assume its proportionate share of the bonded indebtedness of the township in which the area is located.

Transportation would be a major problem in those areas proposed for annexation in which the density of population is low. Areas having a high density of population could possibly be served by the Transit Company if the demand for service would meet the cost of providing for that service.

AREA NO.1

Area: 340 acres - .53 square miles
Number of Dwelling Units - 15
Estimated Population - 47
Assessed Valuation: Land & Improvements - \$87,190.00
Township - Wayne
Street Mileage - 4.36 miles

BASIC CIVIL CITY SERVICES

WATER

Existing mains - 300 feet
Present customers - none
Future prospective customers - 15
Loss of revenue from 35% surcharge - \$0.00
Gain in revenue from future prospective customers - \$252.00
Fire hydrants - none
Loss of revenue from 35% surcharge on fire hydrants - \$0.00
Amount of hydrant rental reverting to city obligation - \$0.00
Cost of serving area with water mains as now platted:

21,700 feet of mains	
Labor Cost -	\$21,700.00
Material Cost -	<u>56,500.00</u>
Total Cost -	\$78,200.00

Requests for water service - none
The only water main adjacent to this area is at the southeast corner, where the boundary crosses the Pennsylvania Railroad.

SEWER

No present facilities.
No request for facilities.
To provide an outlet for combined sewerage would require a combined sewer 4000 feet long where sanitary sewage would be regulated into the St. Mary's Interceptor, then an extension to convey the storm sewage to St. Mary's River 1700 feet farther.
An outfall sewer to Area No.1 would open an approach for much needed sewer facilities in the Rolling Mill Area and Wildwood Park.
Cost of sanitary and storm sewage (outlet only) - \$141,500.00
Cost of storm drainage for entire area - 413,940.00

FIRE

Entire area lies within a radius of $1\frac{1}{2}$ miles of Fire Station No.7.
Could now be provided with pumper and ladder service.
Future increase in population in this area as it develops would contribute to the need for another rescue unit.

POLICE

Cost of police protection for this area (.53 square miles) - \$21,200.00.

STREET MAINTENANCE

State - .55 miles
Opened - 2.73 miles
Unopened - 1.08 miles
Total - 4.36 miles
Annual maintenance cost - \$4,095.00

GARBAGE COLLECTION

Cost of garbage collection (based on present 15 dwelling units) - \$115.80.

AREA: 736 acres or 1.15 square miles.

PRESENT
POPULATION (EST): 1050

FUTURE (1956)
POPULATION (EST): 9400

PRESENT
LAND USE:

200 dwelling units (about 10% substandard)	
3 sand and gravel pits	4 grocery stores
5 riding academies	1 drug store
6 motels	3 bars or taverns
4 veterinary hospitals	3 cafes
4 gas stations	1 trailer park (30 units)
4 dairies	5 misc. businesses
6 greenhouses	1 swimming place

ENGINEERING: (See exhibit A for details.) Drainage is unsatisfactory along Cherry Creek from Colorado Boulevard to Holly Street for a distance of 200 to 500 feet. Three bridges will be required across Cherry Creek and the roadways on both sides of Cherry Creek will have to be paved. Street continuity is very poor. Adequate capacity exists in the outfall lines of the sewage collection system to permit servicing the area.

HEALTH: (See exhibit B for details) The private water supplies and sewage disposal are not designed to acceptable standards in many cases. Control of rodents and flies would be difficult because of natural harborage for such pests afforded by certain land uses in the area.

WATER: This area can be adequately served by water after the proposed 30" main on S. Garfield Street from Buchtel Boulevard to Mississippi Avenue has been installed. Annexation would not only cause the Department to make a capital expenditure of \$588,000, but it would also result in an annual loss of revenue of some \$45,500.

BUILDING: A general clean-up is indicated.

ZONING: The Zoning Office would have to make a field survey of the area, prepare base maps, land use maps, and finally zone maps of the area.

POLICE: No special problems indicated;

FIRE: Annexation of these areas would extend present and planned facilities to the limit permitted by the Board of Fire

Source: Special Annexation Study. Denver Planning Office. 1951.

Under-writers. Some 70 new fire hydrants would be required, at an annual rental of \$22.50 each. Any further annexation of land to the East and /or South will involve the establishment of a new Assistant Chief District, and the resultant erection of a double company quarters, together with the purchase of equipment and appointment of manpower; approximately 26 men in all to man and serve these areas.

RECREATION: This area would have a high priority for the acquisition of one large area (not less than 15 acres) to include an open lawn area for informal recreation, an area for baseball and softball, a playground and apparatus area, picnic areas, public toilets, and special recreation facilities for such sports as tennis or swimming. In addition 2 small playgrounds are needed. These might be developed in conjunction with the schools.

SCHOOLS: Annexation would probably require more schools, with correspondingly increased instruction costs.

WELFARE: There are six welfare cases in area I. Experience with annexed areas indicates that the welfare load increases rapidly in annexed areas as they are fast-growing sections and usually have a large economically marginal population.

FINANCES: (See exhibit C for details)

Estimated Capital Outlay (1st Five Years)	\$5,327,500
Estimated Annual Operating Expenses	\$,900,500
Estimated Initial Revenue (all sources)	\$ 144,700
Estimated Future Annual Revenue (after full development- all sources)	\$ 581,200

EXHIBIT "A"

In accordance with the request of the Planning Director, dated October 2, 1951, we are herewith transmitting the estimate of the cost of providing engineering services and necessary improvements, other than improvement districts, for the four areas in question.

AREA NO. 1

Item No. 1
Surface Drainage

An unsatisfactory surface drainage condition prevails on the south side of Cherry Creek between Colorado Boulevard and Holly Street for a distance varying from 200 to 500 feet. Much of this area is undeveloped at the present time and for that reason is not a matter of consequence. Upon the presumption that the area will ultimately be developed, some form of special improvement district will be required to alleviate this condition.

Item No. 2
Sanitary Sewers

Sufficient capacity exists in the mains within the present City limits to absorb the anticipated load resulting from this development of Area No. 1 only.

Item No. 3

The continuity of existing Streets in this area is very poor. Upon the presumption that the area would be annexed to Denver and reach saturated growth within five year period, the continuity of the existing street system would be greatly improved through the control of subdivision development.

It is believed that bridges will be required across the channel of Cherry Creek at Dahlia, Holly and Monaco Streets at an estimated cost of \$85,000 each. It is believed that the Holly Street bridge would require construction the first year after annexation:

		<u>Est. each</u>	<u>Total cost</u>
Bridges	3	\$85,000.00	\$255,000.00
Pave South Side of Cherry Creek		0.00	100,000.00

It will be ultimately necessary to pave the south side of Cherry Creek throughout Area No. 1. It is estimated that the cost of this paving will approximate \$100,000 and that this expense will probably be from general funds.

Item No. 3 Cont'd.

To comply with the provisions of the Master Street Plan, the roadway on the north side of Cherry Creek should likewise be constructed. It is estimated that the cost for grading the roadway will approximate \$100,000 and that the cost for paving will approximate \$100,000. This particular area is presently occupied in part by sand and gravel plants. In future years, if this area is developed for residential purposes, it is probable that these plants will be ordered to cease operations. In doing so, they will of necessity be compensated for whatever interest they may have.

It is pointed out that several of the major streets in this area, for example Holly Street, should be constructed to a higher width and higher standard than the other residential streets. It is recommended that in such instances the City should stand a portion of the increased cost for such type of construction. At the present time there is no established policy in this matter.

Item No. 4

Subdivision Plats, monuments and range points.

In order that the future engineering developments of this area may be advanced on a firm footing, it will be necessary that the exterior dimensions of Area No. 1 be appropriately surveyed, fixing the exact distances against the official distances that may now be of record.

It will likewise be necessary that the quarter corners of all of the sections in this area be determined and monuments erected. It is estimated that the cost of performing this service will approximate \$4,000. This will, of course, be a total cost.

Also, it will be necessary to establish range points at the corners of each existing block in the existing subdivisions. It is estimated that the cost of performing this service will be \$2,700. This is also a first year as well as a total cost figure.

The probable cost of processing and checking future subdivision plats in this area is estimated as follows:

	<u>First year</u>	<u>Total cost</u>
Processing & checking subdivision Plats	\$2,000.00	\$8,000.00

Item No. 5

Engineering Services

(a) The cost of providing temporary engineering services to cover the above items is reflected in the figures set forth above.

Item No. 5 cont'd.

(b) It is anticipated that the permanent additions to the Engineering and Survey staff would comprise one person to provide and keep current all records and requirements imposed by this annexation. The salary for this additional personnel would be about \$3,600 a year. This does not, however, include personnel that would be required to plan and construct special improvement districts such as storm and sanitary sewers as well as street paving and related development.

Inasmuch as the cost for providing engineering services for special improvement districts is recoverable from the district, it is deemed advisable to program such personnel and costs in relation to the demands of the area.

Item No. 6

Public Works Maintenance-Sanitary Services Sewer Maintenance

In order to arrive at the estimated cost for providing the above services, we have divided the 1952 budget for the above services by the estimated number of single-family-dwelling units to arrive at the average cost per dwelling unit and have applied this factor against the ultimate development of the area.

1952 Budget

Public Works Maintenance	\$1,512,700	
Sanitary Services	1,314,500	
Sewer Maintenance	<u>131,000</u>	
	\$2,958,200	Say
		\$3,000,000

Estimated Ultimate Yearly Costs

100,000 Dwellings = approximately \$30 per year per dwelling.

Estimated population for 5 year period: 5 dwellings per acre
14 people per acre

Area Number 1 comprises approximately 581 acres on which it is estimated that there will ultimately be 26 miles of streets. Assuming that ultimate development will provide 5 dwellings per acre, it follows that the cost for providing the above services would be:

$$581 \text{ acres} \times 5 \text{ dwellings} \times \$30 = \$87,150 \text{ per year}$$

The cost to grade and gravel 26 miles of streets is estimated to cost \$26,000. The cost to install 155 culverts is estimated to be \$23,250, both of these costs occurring in the first year.

It is recognized that the average dwellings per acre is probably not exact; however, from above information we believe the estimate is reasonable.

