
Logistics Management Institute

Base Reutilization Status
An Assessment

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March 2000

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Executive Summary

Since 1988, the Department of Defense has closed 97 major military installations and closed or realigned hundreds of minor installations. To ease the long-term effects of the closures and realignments on local communities, DoD assisted with hastening each affected community's planning for economic recovery and promoting base reuse. This assistance consisted of advising and guiding community leaders, lending financial aid for planning, and streamlining procedures for transferring property.

The Office of Economic Adjustment (OEA), as DoD's lead office and coordinator of federal assistance to local communities affected by base closure, periodically reviews the status of base reuse. As part of its review, OEA selected four former military bases in different stages of conversion to civil use and asked LMI to evaluate the progress of base reuse efforts. The four former military bases are Pease Air Force Base (AFB), NH; Fort Devens, MA; Lowry AFB, CO; and Fitzsimons Army Medical Center, CO.

To assess DoD's progress in converting each of the four former military installations to civil use, we considered three sets of economic and fiscal measures. The three sets of measures were: the level of new public and private capital investment; the addition of new jobs and payrolls, by economic sector; and the fiscal status of the local redevelopment authority.

Overall, we found that significant progress has occurred at all four sites. At the former Fort Devens, now known as Devens, private capital investments between 1995 and 2000 totaled about \$105 million. Institutional capital investments and public capital investments during the same period totaled about \$75 million and \$59 million, respectively. These investments, along with a strong local economy, contributed to creating more than 2,400 jobs at the former base—meeting almost half the goal of the base reuse plan. Given the momentum of the economic development at Devens, the community probably will achieve its employment goal early, within 10 years.

At the former Pease AFB, now known as Pease International Tradeport, private capital investments between 1992 and 1999 totaled nearly \$120 million.

Institutional capital investments and public capital investments during that same period totaled \$5.4 million and \$56 million, respectively. Moreover, the Tradeport has generated over 2,000 new jobs. Given the current construction and projected new business activity, Pease appears poised for greater growth in the next few years.

At the former Lowry AFB, now integrated into the cities of Denver and Aurora, private capital investments between 1994 and 1999 totaled over \$369 million. Institutional capital investments and public capital investment during that same period totaled \$52 million and \$58 million, respectively. There are nearly 1,200 new jobs at the former facility. The number of jobs is expected to increase once the office and retail buildings are constructed.

The former Fitzsimons Army Medical Center, now referred to as the New Fitzsimons, is part of the city of Aurora. Since 1995, when DoD announced that the facility would close, institutional capital investments and public capital investments at Fitzsimons totaled \$180 million and \$7.5 million, respectively. Private investments have been minimal. New jobs, to date, exceed 1,000. Although Fitzsimons is in the early stage of redevelopment, prospects for success look good.

We found common elements among the redevelopment approaches for the four sites. The infrastructure needs to be improved substantially to facilitate efficient and timely redevelopment. Also, quasi-public authorities were established at all sites to manage and implement the reuse plan. Nevertheless, the land use patterns were different. We attributed most of the differences in land use to two primary factors: the former base's location with respect to regional market conditions; and the types and conditions of the facilities at the former bases.

On the basis of our findings, we concluded that obtaining adequate financing to implement reuse plans is a crucial element in redeveloping the former bases. We also concluded that all sites are progressing considerably in meeting the objectives of the reuse plan. Thus, we anticipate that each site will continue to attract employment at levels that will exceed the on-base civilian employment that existed before the base was closed.

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Chapter 1

Introduction

Since 1988, the Department of Defense has closed 97 major military installations and closed or realigned hundreds of minor installations. To ease the long-term effects of the closures and realignments on local communities, the Department assisted with hastening each affected community's planning for economic recovery and promoting base reuse. This assistance consisted of advising and guiding community leaders, lending financial aid for planning, and streamlining procedures for transferring property.

The Office of Economic Adjustment (OEA), as the Department's lead office and coordinator of federal assistance to local communities affected by base closure, periodically reviews the status of base reuse. As part of its review, OEA selected four former military bases in different stages of conversion to civil use and asked LMI to evaluate the progress of base reuse efforts. The four former military bases are

- ◆ Pease Air Force Base (AFB), NH;
- ◆ Fort Devens, MA;
- ◆ Lowry AFB, CO; and
- ◆ Fitzsimons Army Medical Center, CO.

STUDY APPROACH

In assessing the progress of reusing the four former military bases, we focused on three indicators of local economic development: capital investment, employment and earnings, and the fiscal status of local redevelopment authority. These indicators are discussed briefly below.

Capital Investment

Capital investment typically is the basis for future economic development. For this report, we grouped capital investments into three categories: private, institutional, and public.

Private capital investments are outlays for housing, commercial, and industrial facilities that are funded from private sources.

Institutional investments are outlays for institutional facilities, such as schools and colleges, hospitals, and prisons. The funding sources may be public or private.¹ For example, a new community college or public hospital would be constructed using public funds. Private financing would be the source of funds for parochial schools or nursing homes.

In our taxonomy, public investments are outlays made by redevelopment authorities and local governments for developing infrastructure at the former military bases, which includes demolishing and disposing of older buildings. Typically, public capital investment is a prerequisite for obtaining private economic-development capital. For example, at former military bases, obsolete buildings must be cleared from the land to open space for new office buildings. Also, at some former military bases, water and sewer lines must be extended and roads must be widened or improved.

For each community, our starting point for accounting for capital investments is the year in which the local redevelopment authority was established. Because comparing new capital investments with capital invested before the base was closed is not meaningful, we do not identify a baseline for comparison.

Employment and Earnings

We considered the employment-and-earnings indicator quantitatively and qualitatively. The quantitative measure is the number of new jobs at the former base compared with employment levels at the base before it closed. The qualitative measure for determining redevelopment success is derived by comparing average earnings of new employees at the former base with average base wages at the base before it closed.

For our analysis, we included only jobs and payrolls that are new to the defined impact area. Thus, we excluded the following employment and payroll data:

- ◆ Intra-regional moves that represent transfers of economic activity
- ◆ Military positions of military activities that either remained or transferred to a government-retained part of the closed base

¹ In our taxonomy, we distinguished between publicly funded institutional investments and public capital investments primarily on the basis of the result of the investment and on the public entity making the investment. Under our taxonomy, institutional investments had to result in institutional facilities (e.g., schools, hospitals), not in infrastructure-type facilities (e.g., roads, sewers). We considered all investments by the redevelopment authorities as public capital investments.

- ◆ Secondary jobs and earnings off the former bases that result from added direct jobs, particularly in the manufacturing sector
- ◆ Spillover effects, such as those that result from creating ancillary businesses off the former bases for new development and additional business travel.

Typically, communities affected by base closures are concerned with replacing the jobs and associated payrolls lost because of the base closure. Consequently, we established the base closure date as our starting point for accounting for new jobs and added payrolls. The baseline for comparison consists of the number of federal jobs and associated payrolls eliminated because of the base closing.

Fiscal Status

We determined each authority's fiscal status by analyzing each authority's operating revenues and expenditures and assessing their fiscal condition in terms of self-sufficiency. Where appropriate, we considered fiscal interaction between the redevelopment authority and the local government.

Because a redevelopment authority's status typically is not compared with a pre-base closure condition or with other public entities, we identified no external baseline for comparison.

REPORT ORGANIZATION

In the chapters that follow, we present our analyses and evaluation of the progress of each of the four former military installations. Chapter 2 contains the analysis for Devens; Chapter 3, Pease; Chapter 4, Lowry; and Chapter 5, Fitzsimons. Chapter 6 closes the report with our findings and conclusions.

Chapter 2

Devens

BACKGROUND

Devens Enterprise Commission

In 1991, the Department of Defense announced that Fort Devens would close within 5 years. The military facility was a major economic stimulus to nearby jurisdictions; its closure was a serious local economic concern. Fort Devens closed in 1996. Consequently, job losses at the post totaled 1,662 military and 2,178 civilian positions. At closure, Fort Devens was renamed Devens.

Devens is contained in three relatively small towns: Ayer, Harvard, and Shirley. Local officials recognized that they had to develop a plan that would take advantage of the facility resources and ease the transition. However, the ability of the communities to finance and implement a comprehensive plan for reusing the base was limited. When the base closure was announced, the economy of Massachusetts was stagnant. The stagnating economy was an additional impetus for action at the state level. In response to the towns' need for assistance, Massachusetts enacted a statute creating the Devens Enterprise Commission in 1993. The legislation allocated no more than \$200 million for redeveloping Devens, with the aim of restoring jobs lost because of the base closure. The commission, which included officials from the three towns, also had the power to administer and enforce the reuse plan.

Mass Development, a quasi-public real estate and economic development agency formed by the Commonwealth of Massachusetts, manages the Devens project. It is the largest of numerous economic development projects the agency manages throughout the state. The agency performs many functions at Devens that typically a local government does, including providing public services and utilities.

Location

The location of former military facilities is a major determinant of reuse success. For example, facilities in metropolitan areas can be expected to recover more quickly than more isolated ones.

Devens is outside a metropolitan area, but by no means is it remote. It is approximately 25 miles from the high-technology corridors outside the city of Boston. As such, it is in the path of future development extending from the Boston western

suburbs. At present, Devens has a lower cost of living, particularly for housing, than the Boston metropolitan area, but lacks some of the amenities of a large city.

Land Use and Allocation

Devens comprises 4,073 acres, with the area allocated for numerous uses. As shown in Table 2-1, one-third of the land, or 1,356 acres, will remain open space. In 1999, the Army conveyed 830 acres of land to the U.S. Fish and Wildlife Service for conservation.¹ At present, there are 600 acres of conservation and preservation land at Devens. Industrial and commercial sites, in several industrial parks and other planned sites, are allocated 28 percent of the total available land. Other major users are federal facilities, the golf course, and residential areas. As of 1999, 2.6 million square feet of space were under construction or completed. Most of the new space is in the industrial parks. In addition, 2.2 million square feet of space has been reused, with the Army Reserve using about two-thirds of it.

Table 2-1. Land and Space Allocation by Use

Land use	Acres	New construction (ft ²)	Reused buildings (ft ²)
Open space	1,356	—	—
Industrial/commercial	1,127	2,424,085	656,010
Airfield	246	—	—
Golf course	260	—	—
Federal uses	354	—	1,541,083
All other uses	730	160,915	42,907
Total	4,073	2,585,000	2,240,000

CAPITAL INVESTMENT

One measure of economic activity at Devens is the level of past, current, and projected capital investment. We grouped the capital outlays into three categories: private, institutional, and public.

Private Capital Investment

Table 2-2 shows the private capital investments at Devens since 1994. The total capital outlay is \$105 million, which includes current construction. The capital outlay includes the purchase of 106 acres of land from Devens, valued at \$4.3 million. Significantly, the total private investment at the end of FY00 will be almost twice that of the public investment.

¹ This conveyance is not part of the land purchased by Devens from the Army.

Table 2-2. Private Investment and Jobs

Organization	Land purchase amount (\$)	Lot size (acres)	Private investment (\$ million)	Employees
Parker-Hannifin	110,000	11	5	132
Netstal Machinery	563,300	6	3	44
Pharm-Eco	1,147,000	20	16	400
Ryerson-Thypin	800,000	13	7	100 ^a
Gillette	513,000	26	18	240 ^a
Learning Express	505,000	2	1	14
Sonoco Co. (Gillette)	432,000	22	50	185
Comco Graphics	80,000	4	3	32
Image Software	150,000	2	1	65
Total	4,300,300	106	104	1,212

^a Total expected in 2000.

Institutional Investment

The dominant institutional capital investment at Devens was the construction of the federal medical facility for the Federal Bureau of Prisons. The estimated cost to construct the 398,000-square-foot building was \$75 million.

Public Investment

The Devens reuse plan, completed in 1994, estimated that at least \$50 million in capital funding would be required for improving facilities—including wastewater treatment plants, roads, and utility systems—to attract business to the site. In response to the plan, various capital projects were initiated. As shown in Table 2-3, public investment from FY95 to FY00 at Devens totaled \$59 million.

Table 2-3. Public Capital Outlays

Fiscal year	Public capital outlays (\$ million)
1995	0.2
1996	5.2
1997	12.1
1998	7.5
1999	7.7
2000	26.3
Total	59.0

Almost 50 percent of the total investment will take place during FY00, with an annual average of about \$10 million from FY95 through FY00.

Table 2-4 shows the allocation of the public capital funds.

Table 2-4. Capital Outlays by Category, 1995–2000

Category	Amount (\$ million)
Equipment	3.3
Facilities	9.8
Environmental	1.5
Demolition	9.6
Base acquisition	10.3
Roads	1.8
Other infrastructure ^a	22.7
Total	59.0

^a Roads, water lines, sewer lines, and related improvements.

A large part of the capital outlay is allocated for improving the infrastructure—roads, water lines, sewer lines, and related improvements—to facilitate development. Demolition of existing structures is also a large expenditure. Outlays for constructing facilities are concentrated in FY00. Base acquisition costs are essentially funds allocated to purchase land and some former installation structures at Devens from the Army that can be renovated and used for housing or commercial and institutional space. Most of the public investment was made with state funds, with federal funds representing a small share of the total.

Revenue sources for capital outlays between 1995 and 1998 are shown in Table 2-5. As these data show, all capital funds were derived from Mass Development contributions and direct state grants.

Table 2-5. Revenue Sources for Public Capital Projects, FY95-FY98

Revenue source	Amount (\$ million)	Type
Federal	0.0	Grants ^a
State	2.7	Grants ^b
Local government	0.0	—
Own sources (Mass Development)	56.3	Grants
Total	59.0	—

^a As of FY99, no federal funds have been spent on capital projects.

^b This total includes \$2.7 million in direct state funds for inter-modal travel and \$1 million for demolition.

EMPLOYMENT AND EARNINGS

Net New Jobs

The measure most economic development agencies use to determine their success is the creation of new jobs. Table 2-6 shows the estimated number of jobs created by the end of 1999.

Table 2-6. Employment by Sector

Sector	Jobs
Federal	302
State/local	156
Educational (mostly public)	248
Total institutional/government	<u>706</u>
Commercial/office (private sector)	346
Industrial/warehouse (private sector)	1,310
Other (mostly nonprofit)	68
Total	2,430

Private-sector jobs represented more than 70 percent of all jobs at the end of 1999. The high percentage of private activity, likely to rise during the next decade, is an important indicator of the success of redevelopment. Mass Development anticipates that most job growth will come from private investment.

Earnings

To measure the economic stimulus of new employment, we estimated average earnings per employee in private-sector jobs. To do this, we estimated wages for the Standard Industry Classification code for each of the identified industries. Average earnings for those identified industries at Devens in Massachusetts differ considerably among the identified sectors. The weighted average earnings (1997 earnings data) for 1,400 employees at Devens are \$43,733, considerably above the Massachusetts average of \$33,478. We estimated the total annual earnings (in 1997 dollars) for these employees at \$61 million. Excluded from the data are major federal employers, such as the Federal Bureau of Prisons; institutions, such as schools; and certain service jobs. However, aggregate earnings (private and public sector) should be well above \$100 million in 1997 dollars.

The addition of jobs at above-average pay has an economic effect beyond the boundaries of Devens. Almost all new employees live and consume goods and services in nearby communities. Because the earnings of Devens employees are above average for the area (Worcester County average earnings in 1997 were

\$29,239, below the state average), their economic impact on the region should be positive.

For this report, we only included net new jobs in estimating employment gains because the base was closed. From a regional economic perspective, a transfer of economic activity of the same magnitude from one part of the region to another results in little long-term regional economic gain. To avoid the concern that businesses in the region may relocate to Devens because of state-financed incentives, the commission has an agreement with communities in the Devens impact area. The agreement specifies that businesses now in this zone cannot move to Devens unless appropriate space cannot be located in the communities. Although most businesses locating at Devens were formerly in Massachusetts, they were, with two exceptions, primarily outside the impact area. Companies relocating also typically expanded their employment base. Therefore, there is no basis for the potential concern that Devens is competing with nearby communities.

FISCAL STATUS

Operating Revenues

Mass Development operations at Devens are similar, but not identical, to those of a local government. That is, Devens receives income from its tenants and provides the type of services to the tenants that are more typically the function of local government. However, public education is contracted out to one of the local school districts.

Devens obtains operating revenues from four sources: fees in lieu of property taxes; property leases; sales of utilities; and other revenues, including charges for use of recreational facilities. The fees cover part of the service cost to the property. They are not charged on the basis of property value but per square foot. The fees are lower than typical property taxes industry would pay in Massachusetts for a facility. At present, fees represent only a small percentage of operating revenues. For example, municipal fees is only 7 percent and lease income is about 10 percent of operating revenues. About 71 percent of operating income is derived from utilities.

Essentially, Devens acts as a distributor of utilities, apparently at prices either lower than, or competitive with, other communities. Devens also rents or leases recreational facilities.

Operating Outlays and Net Flows

Operating expenditures include salaries and benefits for employees, administrative costs, utility operations, public safety, public works, and recreation operations. The agency pays the Massachusetts State Police to patrol roads and provide other police services. The agency also maintains a fire department, ambulance

service, and public works. Expenditures are similar to those of local governments, with the exception of marketing costs, which exceed what a locality would typically spend for promoting economic development. Devens has no public schools, but pays local school district tuition for students who are Devens residents. Salaries and benefits accounted for over a third and utilities another third of all operating outlays in FY99. Devens also makes annual payments toward the \$17 million debt to the Army for land acquisition.²

Utilities produce a \$1.2 million surplus and recreation activities produce a smaller one. Nonetheless, as shown in Table 2-7, the operating deficit is \$4.7 million. Mass Development offsets the deficit from its aggregate (statewide operations) budgetary surplus, which in FY99 was \$8.9 million. The operating surplus results from bond issuance fees and investment income.

Table 2-7. Operating Revenues and Outlays in FY99

Revenues and outlays	Amount (\$)
Operating revenues	7,245,000
Operating outlays	11,950,000
Operating income (deficit)	(4,705,000)

Over time, the deficit, which was lower in FY99 than in FY98, should decrease as fees and other payments, such as from utilities, increase as more tenants move to or expand their activities at Devens. Outlays, such as for police and fire protection, should rise more slowly than fees because some of the costs, such as fire protection, have a large fixed component. However, given the current fee structure, a balanced budget is not anticipated for some time.

MEETING THE REUSE OBJECTIVES

Progress to Date

The ability of Devens to generate substantial private-sector employment relatively soon after the base was closed is impressive. Progress in meeting reuse objectives accelerated in 1998 and 1999. The progress has been achieved because of several factors. These include substantial state financial support, active promotion by Mass Development, and a strong regional economy. The federal government also provided grants totaling \$4.6 million between FY95 and FY98 that facilitated planning and capital projects.

² In 1999, Congress enacted legislation that broadened the eligibility requirements for local development authorities to obtain former military bases at no cost through economic development conveyances. Under this type of conveyance, redevelopment authorities must reinvest their property-related lease proceeds in job-generating activities. Thus, Devens may seek relief from the Army for future real estate acquisition payments.

Long-Term Outlook

The Devens plan is to create, at a minimum, a total of 7,000 jobs during a 20-year period. By the end of 1999, 1,656 civilian and 774 other jobs had been added at the former base. Therefore, almost half the employment target has already been met. At this rate, Devens is very likely to exceed its minimum goal within 10 years.

Other reuse objectives, including environmental protection, diversity of economic activity, planned development, and the provision of business and community services also are expected to be achieved well within the allocated time frame.³

³ For a comprehensive list of goals, see Chapter 498 of the Massachusetts Acts of 1993 that created the Devens Enterprise Commission.

Chapter 3

Pease International Tradeport

BACKGROUND

Pease Redevelopment Authority

Pease Air Force Base had been operating for 35 years when in March 1991 it became the first military base to close under the DoD's base realignment and closure. Job losses totaled 2,250 military and 400 civilian positions. The average earnings of the civilian personnel were approximately \$29,000 annually. Combined with pressure from an economic recession, the closure posed serious implications for the state and regional economy at the time.

Recognizing the economic importance of the base, the state, in 1990, set up an independent authority to oversee the redevelopment of Pease AFB. This entity, the Pease Development Authority, has a seven-member board that includes representatives from the state and local level.

The Air Force granted the authority leasing rights to the base under an arrangement called a "lease in furtherance of conveyance" for a term of 55 years or until the deed can be transferred when environmental cleanup is completed. The Pease Development Authority paid only \$1 for the property rights to the base.¹

New Hampshire gave the authority the power to acquire and redevelop property from the state. The base has been redeveloped as the Pease International Tradeport.

Location

The Tradeport is in Portsmouth and Newington, NH, along Interstate 95 and Route 1, approximately 55 miles from Boston's Logan International Airport. The Tradeport is very close to the Port of New Hampshire, the northernmost container port in the United States, and less than an hour by motor transport from high-technology corridors along Route 128 in Massachusetts. A large part of the former base is in Portsmouth's city limits, while another part is in the town of Newington, NH.

¹ The Pease Development Authority paid a nominal amount for the property because it purchased the property through an aviation public-benefit conveyance. Under the conditions of the conveyance, the Pease Development Authority must reinvest lease proceeds in aviation-supporting activities.

Land Use and Allocation

The Tradeport comprises more than 3,900 acres, with the area allocated for different uses. For convenience, we grouped the separate land-use allocations in three categories: federal, aviation, and aviation support. As depicted in Table 3-1, the federal uses comprise about one-third of total area, with more than 1,000 acres under the control of the U.S. Fish and Wildlife Administration. Aviation activities comprise a little more than one-third of the total area. The remaining area is allocated for aviation support, such as an industrial area and a golf course.²

Table 3-1. Land Allocation by Use

Land use	Acres
Federal	
U.S. Fish and Wildlife	1,075
Military	229
Aviation	
Airfield	1,104
Airport Industrial	301
Aviation support	
Industrial	208
Business/commercial	538
Golf course	152
Open space	350
Total	3,957

CAPITAL INVESTMENT

Capital outlay is a measure of economic activity. At Pease, capital outlays fall into three categories—private, institutional, and public.

Private Capital Investment

The private capital investment in the Tradeport was nearly \$120 million as of September 1999. The investments were used primarily to fund new construction or the renovation of existing structures, but not to purchase land. Unlike firms locating at other former military bases, those wishing to locate to the Tradeport do not purchase land; rather, the firms must agree to long-term leases with the Pease Development Authority. This arrangement is mandated for property conveyed for aviation purposes.

² We labeled this category of land use, aviation support, because the revenues from entities leasing land in this area are used to support airport operations.

Table 3-2 shows the top ten private investments, as of late 1999, representing more than \$91 million in private-sector investment (of the total \$120 million) and more than 821,000 square feet of construction and renovation.

*Table 3-2. Ten Private Investments at the Tradeport
as of October 1999*

Organization	Lot size (000 ft ²)	Private investment (\$ million)	Employees ^a
Lonza Biologics	205	42.1	190
Two International Group, LLC	40	10.4	335 ^b
Aries Pease One	60	7.0	0
Marriot Residence Inn	86	6.4	25
Magna Corporation	30	5.8	NA ^c
Redhook Ale Brewery	129	5.7	47
BEX	NA	5.3	NA ^d
Visa and Passport Center	117	4.8	464
Burgon Tool Steel Co.	82	1.9	42
Cabletron Systems Inc.	71	1.8	89
Total	820	91.2	1,192

^a Number of employees, August 1, 1999.

^b Developers speculatively built, then leased the 2 International Drive building. The number of employees represents the total number of workers housed in the building—not the number working for Two International Group, LLC. The number of employees as of August 1, 1999, was 335.

^c Magna Corp has not yet occupied the space; an estimate for the number of employees is not available at this time.

^d BEX is no longer in business; therefore, the number of employees does not apply.

The table shows that Lonza Biologics, a biotechnology firm, has made the greatest contribution in terms of capital investment. Speculative office-building development accounts for considerable capital improvements at Pease.

Institutional Investment

Institutional investment at the Tradeport totaled \$5.4 million for three renovation projects: \$3.5 million for Brackett School; \$1 million for Franklin Pierce College; and \$900,000 for the College of Lifelong Learning.

Public Investment

From 1991 to 1999, public investment has totaled more than \$56 million. Table 3-3 depicts the allocation of public capital funds.

Table 3-3. Capital Outlays by Category, 1991-1999

Category	Amount (\$ million)
Airport infrastructure	36.1
Roads	8.8
Facilities	3.9
Plans and studies	2.9
Equipment	2.0
Demolition	2.0
Environmental	.4
Total	56.1

By far, the largest share of capital outlays from public funds was allocated to improve airport infrastructure. In particular, the authority had to significantly improve the airport, such as establishing fencing and reconfiguring the runway for civilian aviation use. It also had to establish or extend water, sewer, central heating, and utility systems. Moreover, throughout the former base, the authority had to improve road access and rehabilitate existing structures. In contrast to the expenditures for infrastructure improvements, costs for environmental work were small, for restoring wetlands and removing asbestos.³

The New Hampshire Air Force National Guard, a military tenant that remained from the former base, also contributed significantly to relocate from one site to another on the Tradeport. The improvements are not listed in the table because the Guard is not a new tenant. However, since the base closed, the Guard has spent approximately \$25 million in capital investments.

To date, federal agencies have awarded the authority approximately \$37.7 million for redevelopment—two-thirds of which was earmarked for airport improvements. Table 3-4 shows total capital outlays by source and type of funds. As shown, New Hampshire also assisted the Pease Development Authority. Unlike the federal funding, the state money was offered primarily as some form of debt.⁴ As shown, nearly 70 percent of the total investment is derived from federal grant money, and approximately 30 percent is in the form of debt to the state.

³ DoD has largely borne the cost of other environmental cleanup. To date, the Air Force estimates the cost at \$180 million.

⁴ The authority must repay the funds received from the State of New Hampshire, a part of which is charged interest. The authority's 1997 *Financial Statement* shows that outstanding advances, representing appropriations and accrued interest, totaled \$20,852,106 on June 30, 1997. The total does not include an estimated \$10 million that the state paid separately as the guarantor. The bond proceeds were lent to BEX, a former tenant at the Tradeport, which went into default after the firm declared bankruptcy. The state acted as a guarantor for another \$1 million lent to Atlantic Coast Airlines and \$30 million to Lonza Biologics—proceeds that are being paid back.

Table 3-4. Revenue Sources for Public Capital Projects

Revenue source	Amount (\$ million)	Type
Federal	37.7	Grants
State	18.4	Debt
Local	0.0	NA
Own	0.0	NA
Total	56.1	—

EMPLOYMENT AND EARNINGS

Net New Jobs

The measure most economic development agencies use to determine their success is the creation of new jobs. Business activity at the Tradeport has generated approximately 2,094 new jobs as of August 1, 1999. Table 3-5 shows the number of jobs by sector.

Table 3-5. Employment by Sector

Sector	Jobs
Federal	65
State/local	43
Educational (mostly public)	59
Total institutional/government	167
Commercial/office (private sector)	1,927
Total	2,094

Private-sector jobs represent more than 90 percent of all new jobs. We consider this high percentage of private activity an important indicator of the success of redevelopment. The percentage is likely to rise during the next decade, particularly if commercial flights are able to establish a successful practice, with institutional presence remaining low.

Earnings

To measure the economic stimulus of new employment, we estimated average earnings per employee in private-sector jobs. To derive these earnings, we estimated wages for the Standard Industry Classification code for the industry represented by a particular firm. At Pease International Tradeport, we selected 10 major employers, representing 1,171 employees, to estimate total and average earnings.

Average earnings for the industries represented at the Tradeport differ considerably among the identified sectors. The weighted average earnings (1997 earnings data) for 1,171 employees at Pease are \$38,660—significantly higher than the New Hampshire state average of \$27,356. We estimate total annual earnings (in 1997 dollars) for these employees at \$45 million. These data include one major federal organization that is a government-owned, contractor-operated facility—the Department of State’s passport- and visa-processing center—but exclude other government employers on the base.⁵

FISCAL STATUS

Operating Revenues

While the authority is leasing from the Air Force, it acts primarily as a lessor in its role with the property. Tenants sublease the land, buildings, office space, and airplane hangars on the Tradeport. Subleases are for a period during the 55-year interim lease agreement.

Last year, Pease obtained \$7.6 million in operating revenues from four main sources: rental income from facilities, fees for the recreational use of its golf course, fees for providing municipal services, and interest income on limited escrow accounts. It collects the municipal fees to reimburse Portsmouth and Newington for providing services, including police, fire, and roads and grounds. The authority also collects service fees, based on property value, from tenants in the airport district only. Tenants outside the airport district are assessed at different rates and pay the municipalities directly.

Operating Outlays and Net Flows

The authority collects municipal service fees from businesses in the airport district and forwards them to Portsmouth, according to the agreement between the authority and the city. Businesses outside the airport district make their contributions directly to the city through a local property tax.

As of FY97, the Pease Development Authority was operating at a deficit. Interest for repaying the debt to New Hampshire represents the majority of the authority’s annual expenditures. Municipal service fees show up as expenditures when they are passed on to Portsmouth. The remaining operating expenditures are primarily for maintaining the authority. These expenses include salaries and benefits for employees and administrative, legal, and other operating expenses. Expenditures for maintaining the buildings and facilities on the Tradeport are another major expense. Table 3-6 depicts the authority’s levels of operating revenues and outlays for FY97.

⁵ The estimate of earnings for this employer is based on information about the job and skill types employed. As a federal employer, the Department of State does not pay rent to the authority. The majority of the employees at the passport and visa offices are contracted labor.

Table 3-6. Operating Revenues and Outlays in FY97

Revenues and outlays	Amount (\$)
Operating revenues	7,622,408
Operating outlays	9,211,151
Operating income (deficit)	(1,588,743)

With the exception of interest payments, the authority is able to support its operating expenses with the current level of revenue streams. The authority is making consistent progress toward repaying its debt. Subsequently, the operating deficit was lower in FY97 than the previous year. Over time, we anticipate that the Pease Development Authority will substantially reduce the part of its expenses dedicated to paying interest and eliminate its operating deficit.

MEETING THE REUSE OBJECTIVES

Progress to Date

As the first base closure, Pease has the longest redevelopment history. Currently, the redevelopment at Pease has helped to generate employment and net economic activity far above what existed when the Air Force was active. The expanding economy of the mid- to late-1990s, the strategic location of Pease, and the strong financial support by the state and federal governments have all contributed to this impressive level of activity.

Long-Term Outlook

Pease appears poised for more growth in the future. Several firms have committed to moving to the Tradeport. Major construction is underway for Celestica Corporation, which represents employment of another 550 employees.⁶ Similarly, construction is underway for Aires Properties, which is anticipated to generate another 400 new positions. Pan Am Airlines recently has begun commercial air service from Pease and is projecting adding 400 jobs. If the initiative to establish commuter and other commercial service at the Tradeport succeeds, the Pease Development Authority will move closer to creating another image for Pease—that of a convenient springboard for summer and winter tourists to the New England area. In total, firms (either at the Tradeport or soon to be there) anticipate generating approximately 1,860 additional new jobs.

⁶ Projected as of August 1, 1999.

Chapter 4

Lowry

BACKGROUND

Lowry Redevelopment Authority

In 1991, the Department of Defense announced that Lowry Air Force Base, in Denver and Aurora, CO, would close within 5 years. Because of the probable loss of employment, reduced local purchases of goods and services by the Air Force, and the closure of Fitzsimons Army Medical Center (AMC) within several miles of Lowry, the closure of the facility could have adversely affected the Denver economy. Because of Lowry's economic importance, its closure became a concern to the two cities. Concurrently, because of the rapid growth in the Denver area during the 1990s, the availability of the Lowry land for development was a potential economic asset.

Although Lowry AFB is in Denver and Aurora, most of the land is in Denver. Just before the base closed in August 1994, the two cities established the Lowry Redevelopment Authority. The governing body of the authority is an oversight board with seven members from Denver and two from Aurora. The authority manages, maintains, and provides economic development services to the former base. The authority was conceived as self-sustaining—that is, neither the State of Colorado nor local governments directly funded the operation.

During 1994, the Lowry Redevelopment Authority purchased 735 acres from the Air Force through an economic development conveyance. The land was conveyed for \$32.5 million, payable over 15 years. As of November 1999, the authority had paid \$7.7 million of the \$32.5 million. In early 2000, the authority was granted its request to discontinue paying the balance of the obligation, \$24.8 million, pursuant to public law 106-65. In return, the Lowry Redevelopment Authority agreed to reinvest all proceeds from the property for 7 years to support economic redevelopment at the installation.

The base closed in September 1994. Because of the closure, job losses at the base totaled 4,052 military and 2,275 civilian positions.

Location

The location of former military facilities is a major determinant of the likely success of reuse. For Lowry AFB, its location in a growing region allows it to be converted to civilian use more rapidly than would be the case if it existed outside

a metropolitan area. However, two other large facilities in the area became available for reuse at almost the same time. One facility was the Stapleton Airport in Denver, one mile north of Lowry, which was replaced by a newer airport. The other was Fitzsimons AMC, which is a few miles from Lowry and closed during 1999. When it closed, Fitzsimons contained a large stock of military housing and other facilities. Therefore, a considerable quantity of potentially developable land came on the market.

Reuse Objective

The general redevelopment objective is to create, in a relatively short time, a new community in which residents and others can “live, learn, work, and play.” To accomplish this objective, housing is being built to accommodate businesses interested in locating at Lowry. In addition, several schools and recreational facilities are being constructed. The authority also is planning to construct a business park.

Land Use and Allocation

Lowry property consists of 1,866 acres, including 115 acres of DoD property. Of the property under the authority’s control, about 155 acres have been developed—83 acres for residential use and 72 acres as commercial and office sites. The developed area includes 134,000 square feet of commercial space. About 900,000 square feet of institutional space is in use. Residential lots with former military housing form 83 acres. The Lowry area also contains an 18-hole golf course.

Among other plans, the authority intends to convey 576 acres to the Colorado Golf Association for subsequent development.

CAPITAL INVESTMENT

One measure of economic activity at Lowry since the base closed is the level of actual and projected capital investment. For our analysis, we grouped the capital outlays into three categories: private, institutional, and public. Private investment includes new residential housing and commercial buildings, such as warehouses. Institutional investment may be financed using private funds, such as for a parochial school or with public funds, such as for a community college. Public-sector investment typically is a prerequisite for the private sector to invest in economic development. This is particularly the case for reusing former military bases. Typically, military facilities are not designed to facilitate private-sector industrial or commercial development. Therefore, the public sector has to upgrade some existing infrastructure and add new infrastructure to facilitate the new uses. In addition, many older buildings must be demolished, at considerable cost.

Private Capital Investment

Private capital investment at Lowry can be grouped into two categories: residential housing and commercial space. Most investment at Lowry to date has been residential. As shown in Table 4-1, as of the end of 1999, more than 1,300 housing units have been occupied at Lowry. Of this number, 778 are new units; the balance, renovated former military housing. The projection is that by 2004, 3,797 units will be completed. By 2006 (the current projected build-out year), of the approximately 4,280 units projected to be completed, all but 546 will be new construction. At an estimated average price of \$224,000, the total investment would be approximately \$959 million (in 1999 dollars). Residential investment as of 1999 is an estimated \$292 million, or almost one-third of the projected total.

Table 4-1. Number of Projected Housing Units by Type and Value

Type of housing	Occupied (1999)	Projected at build-out	Total value at build-out (\$ million)
Custom	40	223	106
Single family	206	490	139
Loft	0	112	18
Townhouse	100	120	27
Apartment	957	2,093	297
Other	0	1,547	372
Total	1,303	4,280	959

In addition to housing, private commercial investment as of 1999 includes a health-care company renovating 100,000 square feet of office space, a \$50 million 350,000-square-foot office building, and a \$15 million shopping center. Total private commercial investment as of 1999 is estimated at \$369 million. The type and level of private investment is shown in Table 4-2.

Table 4-2. Private Capital Investment

Investment	Type	No. of units/sq. ft	Value (\$ millions)
Housing	Private	1303	292
Commercial			
Health care center	Private	100,000	12
Shopping center	Private	n/a	15
Office building	Private	350,000	50
Total			369

Nearly 80 percent of the total investment is for housing. That situation typically creates only short-term construction employment. However, we anticipate that additional affordable housing will increase the employment in the Denver area.

Institutional Investment

Institutional investment consists of two subcategories: facilities funded, at least in part, from public sources (but not by the authority); and facilities funded privately, such as private schools. As of 1999, \$52 million was invested in constructing a community college. In addition, several private schools are being constructed.

Public Investment

A substantial level of public investment, mostly related to infrastructure, is necessary to facilitate private investment. For example, land with obsolete buildings needs to be cleared to provide open space for new office buildings. Water and sewer lines may need to be extended and roads need to be widened or improved.

The authority's total public capital investment as of 1999 is an estimated \$58.2 million. As shown in Table 4-3, \$10.2 million of the total was federal grants and \$500 thousand was state grants, with the balance funded by revenue bonds issued by the authority. Most federal funds used for capital investment were grants from the Economic Development Administration. An estimated \$91 million will be required to complete infrastructure improvements (e.g., roads improvement, water and sewer connection upgrades).

Table 4-3. Revenue Sources for Public Capital Projects

Revenue source	Amount (\$ million) ^a	Type
Federal grants	10.2	Grants
State grants	0.5	Grants
Local government	0.0	—
Lowry Redevelopment Authority	47.5	Debt
Total	58.2	—

^a This amount excludes investment for the community college, which is shown as an institutional investment.

The major source for capital funding for Lowry is the bond market. The first bond issue was a 15-year real estate revenue bond for \$33 million in June 1996. During 1998, the authority issued an additional real estate bond of \$6 million. The first two bond issues were secured primarily by pledged revenues from net rental income and from net sales of land. The third issue, also in 1998, for \$14.5 million, was a tax-increment-financing bond used for demolition and infrastructure

improvements. The Denver Urban Renewal Authority will collect the taxes to pay the bond.

EMPLOYMENT AND EARNINGS

The measure most economic development agencies use to determine their success is the creation of new jobs. The estimated number of new jobs—those attracted to Lowry that did not exist at the facility before it closed—by the end of 1999 is 1,185. Most of the jobs are public sector or institutional, such as in private schools. Among the institutions are community colleges, the Colorado Department of Public Health, and the Bonfils Blood Center. Most of the capital outlay at Lowry as of 1999 was for residential construction, which does not directly produce permanent jobs. Currently, the spillover effect of jobs is limited because most institutional employment represents relocations in the Denver area. However, private-sector employment is expected to rise substantially as office buildings and retail buildings are constructed.

No data are available on payrolls for the new jobs. However, earnings are likely to be typical of nonprofit institutions. Because most jobs to date are relocations in the metropolitan area, there is little long-term effect on aggregate income. As more private-sector jobs are created, net new income will be generated.

FISCAL STATUS

The fiscal structure of Lowry consists of two parts: services that are the responsibility of the authority and services that are provided by Denver.

OPERATING REVENUE AND OUTLAYS FOR LOWRY REDEVELOPMENT AUTHORITY

The Lowry Redevelopment Authority depends on rental income and sales of its property for revenue. Revenue from rental income (deducting expenses for rentals) rose from \$1.2 million in 1995 to \$2.7 million in 1998. Most of the rent is from housing units on the former base. In 1998, net sales increased operating income by \$4.6 million. Real estate sales in 1998 accounted for more than half of all operating income. Income from rents represented the second major source of funding.

General and administrative outlays were the largest operating costs in 1998. Property management, including maintenance, constituted the second largest outlay. As shown in Table 4-4, in 1998, operating expenses for the authority were considerably below operating revenue. The Lowry Redevelopment Authority financial report for 1998 shows a net operating income of \$2.9 million.

Table 4-4. Operating Revenues and Outlays in 1998

Revenues and outlay	Amount (\$)
Operating revenue	8,865,000
Operating outlays	5,968,000
Operating income (deficit)	2,897,000

Operating Revenue and Outlays for Denver

Operating revenue for the city and county of Denver, school districts, and special districts is derived from several sources. The city raises half of all its revenue from sales taxes, and only 10 percent from the property tax. The Denver public schools raise most of their revenue from the property tax. Of every dollar in property tax collected in Denver, schools receive 61 cents. Sales tax revenue from the shopping center now under construction could provide additional revenue to the city. At build-out, residential property with a value of \$959 million would be assessed at \$93.4 million and property taxes would be \$7.5 million. The average contribution from real property taxes would be \$1,750 per housing unit. This is above the average housing-unit tax paid in most Denver neighborhoods.

Denver provides typical municipal services, including public safety, recreation, public works, and libraries. Public safety accounts for about half of the budget. Schools are the responsibility of the Independent Denver School District. No data are available about Denver's outlays for services for Lowry residents. Because Lowry represents only a small fraction of the Denver budget, comparing revenue flows to expenditure flows for the area are not feasible.

MEETING THE REUSE OBJECTIVES

Progress to Date

At the end of 1999, about one-third of all planned housing had been built and occupied. The completed share, due to the strong real estate market, exceeds initial projections. Within 5 years, most, if not all, projected housing is to be built and occupied. Currently, a shopping center and office building are under construction.

The expectation is that new housing will attract additional demand for commercial and retail space. At present, new private-sector employment is limited.

Long-Term Outlook

By 2007, the authority plans to construct about 4,200 housing units, which will house about 11,500 persons. In addition, a small number of existing units will be rehabilitated. These units will be sold to individual buyers. At present, construction is ahead of schedule because of the strong demand.

The authority also projects that as much as 2 million square feet of office and commercial space will be built. The space could accommodate approximately 6,700 workers.

Chapter 5

The New Fitzsimons

BACKGROUND

Fitzsimons Redevelopment Authority

The decision to close Fitzsimons Army Medical Center was made in 1995. At that time, the AMC supported 1,291 military personnel and 1,612 civilian jobs. When the AMC closed in June 1999, only the Army Reserve remained at the former Army installation; all other federal employment positions were eliminated. The former Army installation was renamed the New Fitzsimons.

Aurora, already faced with the closure of the nearby Lowry AFB and Denver's Stapleton Airport, took the initiative in 1995 by establishing the Fitzsimons Redevelopment Authority to manage the reuse of the AMC. Originally, the Fitzsimons Redevelopment Authority was an agency of the city and governed predominantly by elected officials, including the mayor. Representatives from the state and Denver served ex officio. The authority largely conceived the original reuse plan. In 1998, the agency was restructured into an independent entity. Aurora retains the majority representation on the authority's board. Other members of the governing board are senior officials from the state and the University of Colorado system, including its Health Science Center (HSC).

Location

Fitzsimons is entirely in Aurora, CO, which is adjacent to Denver. Aurora, the third largest city in the state, has an estimated population of 250,000. The entire Denver metropolitan area has a population of 2.2 million, with a median household income of more than \$41,000, and a 1999 unemployment rate of 2.4 percent.

Reuse Plan

Soon after it was established in 1995, the Fitzsimons Redevelopment Authority began discussing with the University of Colorado about having the HSC occupy the site. The university, a large medical university in the Denver metropolitan area, decided to relocate its entire campus to Fitzsimons. The university relocated its administrative and teaching functions, as well as its growing clinical and research programs. By relocating, the university was able to bring together its hospital, clinics, research schools, and facilities onto one campus at a time when it could no longer expand its 46-acre location. The relocation of the university also enabled the authority to successfully procure an anchor tenant for a large part of

the site soon after the base closure was announced. The authority also was able to develop a meaningful reuse plan by the end of 1996.

The authority's plan calls for the site to be used for education and research in health and medicine. In addition to the vast medical presence of the university, economic development uses slated for the site include a research park and the Colorado Bioscience Park Aurora. The state also plans on developing a nursing home complex for veterans on the site. In addition, some parts of the site will be used to serve the needs of Aurora by including homeless assistance, child care, recreational swimming, and a training center for police and fire services.

Land Use and Allocation

The primary land uses will be institutional and commercial, with the university campus and the bioscience park occupying more than 70 percent of Fitzsimons. There will also be residential and recreation uses, including a 24-acre golf course. Table 5-1 depicts projected land use.

Table 5-1. Land Allocation

Land use	Acres
University campus	217
Bioscience park (commercial)	195
Open space	54
Commercial (retail and hotel)	29
Town center (mix of residential and retail)	9
Veterans nursing home	16
City of Aurora—police, fire training center	10
Aurora Public Schools' Child Development Center	7
City of Aurora—pools and parks	11
Housing	9
Credit union	2
Military (retained for the Army Reserve)	21
Total	580

CAPITAL INVESTMENT

The Fitzsimons Redevelopment Authority inherited a considerable number of residential and office buildings from the Army. However, to support the reuse, many of the structures must be demolished or extensively renovated. Moreover, reusing the base will require improving road access and other transportation infrastructure at Fitzsimons. Such improvements require significant capital investment.

Private Capital Investment

Private capital investment typically consists of improvements for commercial, office, and housing space by private-sector firms. At Fitzsimons, the private sector has not invested capital to date, primarily because redevelopment at the base is only in its initial stages. The base officially closed in June 1999. Usually, considerable public-sector investment is required to attract private-sector capital when redeveloping government-owned facilities. Only limited private-sector investment is expected for the near future, mainly because the fundamental reuse of the site is institutional—primarily for educational and research purposes.

Institutional Capital Investment

Most investment at Fitzsimons has been institutional—primarily for education and research by the HSC. Projects started are listed in Table 5-2.

Table 5-2. Institutional Capital Investment as of October 1999

Investment	Type	Square feet (000)	Value (\$ million)
Center for Advanced Medicine	Institutional	426	119
Rocky Mountain Lions Eye Institute	Institutional	146	12
Cancer Center	Institutional	106	29
Main hospital building	Institutional	452	20
Total		1,130	180

HSC, with University of Colorado Hospital, began three construction projects for state-of-the-art medical facilities in 1999—one for ambulatory care, one for eye care, and one for cancer treatment. The projects represent an investment estimated at \$180 million and 1 million square feet in construction. In addition, HSC invested \$20 million to renovate the old hospital building on the site. This is considered the main building on the site, about 452,000 square feet for office space for the university and the authority staff.

Over the next 4 years (FY00 to FY03), the university plans to begin construction on six other facilities. The largest of these will be the university's first research complex at Fitzsimons. The estimated value of the 600,000 square feet project is \$216 million. The estimated value of the other facilities is \$47 million. The master plan for the university shows construction through the year 2012, resulting in the construction and renovation of approximately 2.5 million square feet.

The university's revenue sources identified to date are shown in Table 5-3.

Table 5-3. University Revenue Sources for Capital Projects, FY97-FY00

Source	Public capital outlays (\$ million)	Type
Federal ^a	30.3	Grants
State	38.2	Grants
Philanthropy	42.0	Grants
Own sources	150.0	Own
Total	260.5	

^aFederal funding is from Department of Defense, Economic Development Agency, Department of Housing and Urban Development, and General Services Administration.

Because the university is state sponsored, most of HSC's funding is from public sources. As of 1999, the state has contributed \$7.8 million in appropriations to the university for Fitzsimons' redevelopment; it has pledged to appropriate the same amount for each of the next 10 years, a total of \$100 million. In addition, the state has contributed approximately \$30 million in construction funds.

Additional state and federal funds, including debt financing, will be used to meet the university's construction needs. Last summer, the state passed legislation that will authorize the university to spend as much as \$216 million, of which \$35 million will be from federal funds, for its first research complex at Fitzsimons.

Public Investment

To date, more than \$14 million in base reuse funding has been used for improving the infrastructure on or around the base. The revenue, by source, is shown in Table 5-4.¹

Table 5-4. Revenue Sources for Capital Projects by the Fitzsimons Redevelopment Authority, FY98-FY00

Source	Public capital outlays (\$ million)	Type
Federal ^a	8	Grants
City of Aurora ^b	5	Direct, loans
Own sources	1	Revenue
Total	14	

^aFederal funding sources include Economic Development Agency and Department of Housing and Urban Development.

^bIncludes approximately \$1 million in matching funds.

¹ The Fitzsimons Redevelopment Authority is acquiring funds from the Veteran's Administration for building a nursing home for the state's veterans. The authority expects Congress to approve between \$90 and \$105 million for the project.

As shown, more than 50 percent of the total investment comes from federal grants, and the remainder comes from local assistance. Although the funds have been allocated, not all of the money has been used. Instead, the bulk of funds are earmarked for capital investment projects in FY00 and later.

Aurora has made capital improvements on its own by using city-generated resources. By the end of FY00, the city estimates that it will spend more than \$4 million on and around the Fitzsimons campus. Table 5-5 shows information about Aurora's expenditures and its planned investments through 2002. Part of the funds will be used for building a training center for Aurora's police and fire services. Some of the funds will be used for improving the boundary area along Fitzsimons by landscaping, increasing lighting and signage, and improving roads. Capital will be used for improving wastewater drainage and sewers and water lines.

Table 5-5. Capital Expenditures by City of Aurora, 1998–2002 (\$000)

Category	1998	1999	2000	2001	2002
Boundary area	NA	310	2,090	1,000	NA
Golf clubhouse ^a	NA	150	30	30	30
Ballfields	5	45	NA	NA	NA
Pool ^b	20	65	65	65	65
Public works	NA	250,000	400	1,000	750
Police training center	NA	NA	1,000	1,000	NA

Note: Data for 1998 and 1999 are actual expenses. Data for 2000, 2001, and 2002 are budgeted expenses.

^a Projected expenses for improvements to the golf clubhouse include an additional \$30,000 a year from 2002 to 2004.

^b Projected expenses for renovations to the swimming pool at Fitzsimons include \$65,000 a year from 2001 to 2004.

The authority is responsible for the remaining capital investment on the site. Table 5-6 shows the available information about capital expenses incurred by the authority. Significant capital investment on the base began only recently.

Table 5-6. Fitzsimons Redevelopment Authority Capital Outlays by Category, 1998–1999

Category	Amount (\$ million)
Base acquisition	1.85
Demolition	0.35
Construction and renovation	0.95
Architectural and engineering fees	0.37
Total	3.52

Table 5-6 shows that, to date, other than for acquiring the conveyances, the majority of capital investments have gone to improving the buildings. For example, although the reuse plan does not include a residential area in the long term, the Fitzsimons Redevelopment Authority leases approximately 30 acres of existing housing units on the site as a revenue source in the short term. The authority improved the units to make them ready to market.

In addition to outlays shown in Table 5-6, the authority plans to spend nearly \$10 million in FY00, principally for constructing the first bioscience park building. The authority will use the building to attract and locate biotechnology firms to Fitzsimons. Construction has begun on the building, the first in the bioscience park. As anticipated, the public has subsidized almost all of the estimated \$8 million project.² The targeted businesses—biotechnology and biomedical firms—also are expected to require a considerable amount of laboratory and equipment support in the future. Anticipated outlays for the coming fiscal year are \$8.79 million in construction and renovation, \$1.09 million in demolition, and \$150,000 in road signs.

EMPLOYMENT AND EARNINGS

Net New Jobs

The measure most economic development agencies use to determine their success is the creation of new jobs. Table 5-7 shows the current employment base at Fitzsimons.

Table 5-7. Employment by Sector, October 1999

Sector	Jobs
Federal	0
State/local	64
Educational (mostly public)	968
Total institutional/government	1,032
Commercial/office (private sector)	30
Total	1,062

Consistent with the reuse plan, a very small part of employment comes from the private sector. Some of the state positions will not be permanent. Approximately 16 positions with the authority, including several property managers, will remain on the site for at least the next 10 years but are not part of the final reuse plan. The number of new jobs on the site is low. The majority of jobs that exist at Fitzsi-

² The Fitzsimons Redevelopment Authority revenues provide a small part of the funds, \$140,000. The Economic Development Administration provides \$6 million, and the remaining funds are a mix of loans and federal grants obtained through Aurora.

mons are for operating the HSC. Although new to Aurora, from a regional perspective, the jobs are relocations from one part of the Denver metropolitan area to another. As of October 1999, approximately 968 positions at Fitzsimons were relocations from HSC's Denver campus. In the future, however, the university is expected to use the new campus for expansion.

Earnings

To measure the economic stimulus of new employment, we estimated the average earnings per employee in private-sector jobs. To derive earnings, we estimated wages for the Standard Industry Classification code for the industry represented by a particular firm. At Fitzsimons, the number of new positions created by the private sector to date is 30.³ The average earnings from the new jobs are above the state average. The average earnings from the existing number of biotechnology positions are roughly double the state average. These findings cannot be generalized to determine the effect of future jobs because the number of new positions is limited.

FISCAL STATUS

Operating Revenues

Although residential and recreational uses are not targeted for the long term, the authority is operating some of the housing units and the golf course at the base. The authority obtains operating revenues from four main sources: rental income from housing units, fees for the use of its golf course, fees for the use of its community club, and lease income from a handful of business tenants. The estimated revenue from these sources was \$2 million in 1999. The authority supplements its operating budget with public subsidies. Including federal grants and city assistance, operating revenues in 1999 were an estimated \$3 million.

Operating Outlays and Net Flows

At Fitzsimons, the authority does not provide municipal services. Rather, the university provides all services for the parts of the sites that it controls, including roads and grounds. Aurora provides all basic services, including police, fire, and other protection for the remaining property. Aurora's responsibilities include maintaining the streets for public areas. Total operating outlays at Fitzsimons are \$2 million. The major expenditures at the authority are for its staff and for the property services provided to current tenants.

³ To date, the authority has attracted five biotechnology firms to the site. The companies range from those specializing in researching diagnostic treatment to developing software for clinical research and pharmaceutical testing. In addition, data from the authority show that Gateways to the Rockies, a catering and conference facility at the site, employs 15 people.

As of FY98, the authority was operating with a surplus. FY99 budgeted costs also show positive flow from operating funds. The Fitzsimons Redevelopment Authority uses net income for capital improvements.

MEETING THE REUSE OBJECTIVES

Progress to Date

In its first year of operations since the base officially closed, the Fitzsimons Redevelopment Authority has progressed considerably in implementing its reuse plan. With cooperation from the military, redevelopment at the site began well before the base officially closed. To date, the authority has successfully attracted a major anchor tenant to the site, around which it plans to develop a state-of-the-art medical research complex. In addition to the university, Fitzsimons has begun attracting private-sector firms, also in biotechnology research. At least five private-sector firms are at the base.

More significant, construction has started on three facilities in which more HSC staff will relocate. Construction also has begun on a fourth building that will house start-up commercial biotechnology firms. The authority continues to demolish extensively and improve the infrastructure to attract commercial firms to the site. The majority of capital improvements in the future, including construction for the university campus, will continue to be heavily subsidized by public funds. Including contributions from Aurora, Fitzsimons will represent \$1.5 billion in capital improvements and contain about 18,000 jobs when the site is fully redeveloped.

Long-Term Outlook

Although Fitzsimons is off to a good start in its redevelopment, it is too early in the redevelopment process to draw inferences about the long-term outlook. However, given the projected investment by the University of Colorado, redevelopment at Fitzsimons should be consistent with the reuse plan.

Chapter 6

Findings and Conclusions

FINDINGS

Our findings focus on four themes: differences in land use, infrastructure improvements and financing, private-sector investment, and the role of redevelopment authorities.

Land Use

The reuse of the land significantly differed among the four former bases. We attribute most of the land-use differences to two sets of factors. One set is the relationship between location of the former bases and the site-specific market demand for the land. For example, the demand for residential land at Devens, a semi-rural area about 25 miles outside Boston, is considerably lower than the demand for residential land at Lowry, which is in an established residential area in Denver.

The other set of factors is the types and conditions of existing facilities at the former bases. The facilities that were in good shape and had significant economic value, such as the airstrip at Pease and the administration building at Fitzsimons, tended to be linchpins for redevelopment and a marketing draw for subsequent reuse and capital investment.

Consequently, both sets of factors resulted in unique redevelopment plans for each of the sites:

- ◆ At Fitzsimons, the redevelopment plan focuses on biomedical research and depends on educational institutions.
- ◆ At Lowry, the principal reuse has been residential. This is seen as a prerequisite for other development.
- ◆ The redevelopment at Pease, partly as a transportation hub for goods and people, revolves around its airport facilities and proximity to Boston and Portsmouth.
- ◆ The redevelopment at Devens is focused on attracting industrial and commercial uses.

Infrastructure Improvements and Financing

The four local redevelopment authorities approached base reuse differently. Yet, all four authorities needed to improve the infrastructure substantially to facilitate efficient and timely reuse. In particular, many buildings at the former bases had to be demolished because they were either substandard, expensive to maintain, or not appropriate for the redevelopment. Some buildings still need to be demolished. Also, the redevelopment authorities needed (and, some in cases, still need) to improve existing roads, build new roads, and upgrade or establish water and sewer connections to facilitate new construction.

Each of the four sites in this analysis had distinct approaches or models for financing infrastructure needs. At Devens, the Commonwealth of Massachusetts pledged up to \$200 million in state funds to meet infrastructure and other funding requirements. The state funds are essentially grants administered by Mass Development. The state believes that economic expansion associated with Devens will, over time, compensate Massachusetts for its financial contribution. Although limited federal funding also was available, the major funding source is the state.

The Pease Redevelopment Authority receives financing assistance from the State of New Hampshire. However, the funds are not grants, but loans to be repaid by the authority once the redevelopment has an operating surplus. Most capital funding has been by federal grants from Federal Aviation Administration and Economic Development Administration.

The Lowry Redevelopment Authority is responsible for infrastructure financing. Real estate revenue bonds finance most of the infrastructure at Lowry. The authority will repay the bonds primarily from the sale of land, mostly for residential construction. Colorado is not financially involved.

At Fitzsimons, state funding, in the form of grants to the Health Science Center, and federal grants are the major sources of investment capital. Public revenue primarily funds the initial investment for incubator industry facilities. Colorado participation is linked directly to the primary objective of Fitzsimons—developing the site as a major medical center.

Private-Sector Investment

The cost for improving the infrastructure is high—averaging more than \$50 million at the three sites that have been operating the longest. However, our study indicates that the initial investment was successful in attracting private-sector capital to a site. For example, both Pease and Devens, where private-sector development is a major part of the reuse plan, have attracted nearly double the amount of their capital investment to date. This represents more than \$100 million worth of new industrial and commercial structures at each site. The level of private investment is projected to rise substantially during the next 3 to 5 years.

Although most private investment at Lowry so far has been for housing, the availability of housing in a wide range of prices and rents is expected to encourage private commercial investment. At Fitzsimons, private investment in biotechnology industries is anticipated after the health facilities are constructed.

Private-sector jobs directly follow private investment. Most of the private-sector jobs have average earnings that exceed the area average.

Redevelopment Authorities and Public Service Provision

At each former military base, a quasi-public, local redevelopment authority was established to manage and implement the reuse plan. The role and structure of the redevelopment authorities differed at each of the four sites. For example, the redevelopment authority at Devens essentially acted as a municipality, retaining responsibility for most services, including police and fire protection.

At Fitzsimons, responsibility is divided between the city in which the base is located and the state university that controlled a majority of the reuse area. This difference in the operating structure has direct fiscal implications for the redevelopment authority. At Fitzsimons, the Fitzsimons Redevelopment Authority only retains a small property management operation.

At Pease, most of the developed property is in the political boundaries of Portsmouth. The city taxes property outside the port district at market value and provides municipal services to its tenants.

Private developers buy most of the land developed at Lowry, and Denver and Aurora provide services. The property also is subject to all local taxes.

CONCLUSIONS

Our conclusions center on financing reuse plans and the progress in meeting reuse objectives.

Financing Reuse Plans

Obtaining adequate financing to implement reuse plans is a crucial element in redeveloping former bases. Without the financing to expand the infrastructure, demolish obsolete buildings, and provide the facilities that will attract private investment, attracting private-sector jobs is difficult.

In addition to federal and other direct grants, we found several funding approaches successfully applied to raise capital. The first approach is having the state issue bonds that will be repaid by the local authority from future revenue flows. The State of New Hampshire issued bonds for use by Pease. An alternative approach is to have a local redevelopment authority issue revenue bonds. At Lowry, the Lowry Redevelopment Authority formed a tax increment financing

district. Property tax revenue from the district repays the bond. Lowry also issued real estate bonds that will be financed from land sales. However, bonds issued by a local redevelopment authority are relatively high-risk and would be difficult to issue without a local government's guarantee of payment in case of default. Nonetheless, these examples show that bonds can be issued with future tax revenue or land sales as the collateral.

Progress in Meeting Objectives

At all sites, we observed considerable progress in meeting the objectives of the reuse plan. In particular, new employment levels met or exceeded anticipated levels. A combination of strong regional economies at all sites and aggressive promotion by the redevelopment authorities accounts for this success. In addition, sites such as Devens offer employers generous terms for relocating. The incentives include assurances of very low taxes (in the form of low fees) for extended periods, below average utility rates, state investment tax credits, and tax-exempt financing. In combination, the financial inducements almost ensure that private development could be attracted to Devens, although it is somewhat outside the booming Boston metropolitan area. At Lowry, the focus is on developing a total community, with a variety of housing. Given the strong Denver employment market, providing a wide range of housing, including affordable housing, is seen as a prerequisite for creating private-sector jobs at or near the site. On the basis of progress to date, we anticipate that each site will continue to attract private-sector employment at levels that will exceed on-base employment before the bases closed.