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Lowry

Denver, Colorado

Project Type: **Mixed Use/Multiuse**

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Case Number: **C036009**

PROJECT TYPE

Lowry is a 1,866-acre (755-hectare) master-planned community being developed on the site of the former Lowry Air Force Base in the center of metropolitan Denver. When completed in 2009, Lowry will feature approximately 4,500 new homes and 86 acres (35 hectares) of commercial uses—including 1.8 million square feet (167,220 square meters) of new office space and 130,000 square feet (12,077 square meters) of retail space—as well as an educational campus and 800 acres (324 hectares) of open space and recreational uses. Eighty percent complete as of early 2006, Lowry already has accomplished its goal of becoming an economic generator for the region. The community, which has moved faster from closing to reuse than any other U.S. military facility, is a national model for base reuse.

LOCATION

Inner Suburban

SITE SIZE

1,866 acres/755 hectares

LAND USES

Single-Family Detached Residential, Townhouses, Condominiums, Duplexes, Loft Housing, Multifamily Rental Housing, Elderly/Seniors' Housing, Affordable Housing, Town Center, Main Street Retail, Office Buildings, Office Condominiums, Educational Facility, Museum, Performing Arts Facility, Library, Open Space

KEYWORDS/SPECIAL FEATURES

- Military Installation Redevelopment
- Brownfield
- Greyfield
- Pedestrian-Friendly Design
- Traditional Neighborhood Development



- Adaptive Use
- Historic Preservation
- Renovation
- Public/Private Partnership
- Infill Development
- Precedent-setting agreement to manage large-scale environmental cleanup
- State-of-the-art telecommunications system, including LowryLink.com, a neighborhood network that connects homes, businesses, and schools



PROJECT WEB SITE

www.lowry.org

MASTER DEVELOPER/PLANNER

Lowry Redevelopment Authority
555 Uinta Way
Denver, Colorado 80230
303-343-0276
Fax: 303-343-9135
www.lowry.org



INITIAL MASTER PLANNER

Sasaki Associates, Inc.
77 Geary Street, Fourth Floor
San Francisco, California 94108
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URBAN PLANNER AND PARKS PLANNER

Design Workshop
1390 Lawrence Street, Suite 200
Denver, Colorado 80204
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Fax: 303-623-2260
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PARKS MASTER PLANNER

Wenk Associates
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ENGINEERING/INFRASTRUCTURE DEVELOPMENT

URS
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GENERAL DESCRIPTION

Lowry—a master-planned community being developed on the site of the decommissioned Lowry Air Force Base in the center of metropolitan Denver—is one of the largest infill redevelopment and base reuse projects in the United States, and was the area’s first major mixed-use, urban infill development. The redevelopment effort is being led by the Lowry Redevelopment Authority (LRA), a quasi-public organization. The mission of the LRA—which will disband when the redevelopment is completed—is to create a community in which citizens can live, learn, work, and play for generations to come.

When completed in 2009, the approximately three-square-mile (7.8-square-kilometer), 1,866-acre (755-hectare) Lowry site will feature approximately 4,500 new homes and 86 acres (35 hectares) of commercial uses—including 1.8 million square feet (167,220 square meters) of new office space and 130,000 square feet (12,077 square meters) of retail space. In addition, the site will contain an educational campus shared by two community colleges and 800 acres (324 hectares) of open space and recreational uses. The total value of the site’s real estate at buildout is estimated to be \$1.3 billion. More than 80 percent complete as of early 2006, Lowry already has accomplished its goal of becoming an economic generator for the region.

THE SITE

Located in the Denver metropolitan area, Lowry straddles the Denver/Aurora border with approximately 89 percent of the site lying within the city and county of Denver while the remaining 11 percent is within the city of Aurora and Arapahoe County. The redevelopment area is generally bounded by Quebec Street on the west, 11th Avenue on the north, Dayton Street on the east, and Alameda Avenue on the south. The site was previously used as a technical training center for the U.S. Air Force, a facility similar to a military community college. Flight activities at the base ended during the mid-1960s, allowing the surrounding area to be developed as residential neighborhoods. Many of the site’s environmental issues are similar to those found in most 50-something communities: coal from a steam plant, a landfill of garbage and debris, gasoline in storage tanks, and solvents used to clean machinery.

PLANNING AND DESIGN

When the Base Realignment and Closure (BRAC) Commission proposed closing Lowry Air Force Base in April 1991, local officials lobbied unsuccessfully to save the base and its 7,000 jobs. Once the decision was final, however, they quickly began working to organize a community effort to plan for the site’s reuse. In February 1992, Denver and Aurora signed an intergovernmental agreement that created the Lowry Economic Recovery Project (LERP) and the Lowry Economic Advisory Council. An intensive, 18-month public planning process ensued. Community leaders and other citizens formed working groups to address various issues, including land uses, transportation, housing, and economic development. Decisions generally were made by consensus and ratified by the LERP executive committee. When the Lowry Community Reuse Plan was completed and approved by the air force in 1993, both Aurora and Denver incorporated it into their comprehensive plans. Effective intergovernmental cooperation and perseverance were key to successful reuse planning.

In August 1994, the two cities formed the LRA to serve as Lowry’s master planner and developer. Its charge was—and remains—to direct and oversee redevelopment within a 15-year time frame in a way that is “income neutral” to both cities. Smart growth and new urbanist principles have guided the redevelopment process since it began.

The LRA is governed by a nine-member board of directors appointed by the mayors of Denver and Aurora. The three-person staff, then led by Jim Meadows, began a detailed master-planning process as soon as the base officially closed on September 30, 1994. The Lowry Community Advisory Committee, also established in 1994, consists of up to 21 members appointed by the mayors of Denver and Aurora, who advise the LRA board of directors on potential community impacts of redevelopment activities.

At the time of its closing, Lowry Air Force Base was an urban enclave surrounded by residential neighborhoods. Almost 1,000 structures were on base, including a headquarters building, classrooms, dormitories, a steam plant, a gas station, and a medium-security prison, as well as 870 residential units. Citizens and public officials wanted the redevelopment at Lowry to be integrated into the existing community and to blend in with surrounding urban neighborhoods. They were concerned about density, traffic, and homeless housing issues. Working together through hundreds of planning meetings, they came up with a set of urban planning principles that continue to guide Lowry's development today. These principles include a diverse housing stock, a pedestrian-friendly environment, design guidelines, smart transportation, education, and parks and other recreational facilities.

Established to ensure that the new homes and commercial buildings blend in with surrounding neighborhoods' and Denver's urban architecture, Lowry's architectural design guidelines are administered by the Lowry Design Review Committee, which was formed in 1997. The guidelines encourage urban development styles that, for example, place low-rise commercial buildings near the street and are accessible by sidewalk, with limited parking in the rear, to avoid office buildings that "float" in a sea of parking. The committee also encourages developers to incorporate architectural details reminiscent of Lowry's past, including air force blond brick, industrial metal details, curved hangar shapes, and the Army Air Corps symbol—a star within a circle. Many of Lowry's architects have found inspiration in styles of the 1930s and 1940s, the era in which the base was built. The committee has held more than 130 meetings and reviewed more than 1,000 projects.

One factor that complicated the planning and development process was the existence of public benefit conveyances (PBCs), a mechanism that makes surplus federal property available at little or no cost for selected public uses, such as housing for the homeless, education, recreation, and health care. When Lowry Air Force Base closed, more than a dozen nonprofit groups and providers of housing for the homeless applied for PBCs and were awarded nearly 400 acres (162 hectares) and numerous existing buildings. The LRA essentially got what was left, and then faced the challenge of having to plan and build around these other uses. "PBCs," notes Monty Force, deputy director of the LRA, "can make 'Swiss cheese' of a project." Groups that received PBCs include the American Red Cross, Bonfils Blood Center, Colorado Community College System, Colorado Coalition for the Homeless, Colorado Community Health System, Colorado Department of Public Health and Environment, the Logan School for Creative Learning, Rocky Mountain Poison Center, Wings Over the Rockies Air and Space Museum, and more. Not all of the recipients had the resources necessary to redevelop and reuse the property and facilities they received. Over time, some groups relinquished their PBCs and others participated in land trades and other deals to better fund and integrate their uses within the community. Although they were not required to do so, many PBC recipients complied with Lowry's design guidelines. Today, the groups that received PBCs at Lowry deliver invaluable services to the community and the region, including supplying blood for regional medical centers, providing housing for the formerly homeless as well as other low-income families and seniors, educating Denver's children and adults, and otherwise improving the quality of life for people throughout the metropolitan area.

Another factor that complicated the planning process was the city of Denver's limited experience with large-scale development. Since the municipality had seen no large-scale development activity in more than 40 years, its regulatory system was not set up to deal with a large-scale master-planned community. So, as Tom Markham, executive director of the LRA, puts it, "We had to write the book on how to do it in Denver." The underlying zoning for the base property was open space, so most of the property had to be rezoned and replatted. This resulted in complicated discussions with Denver's public works, fire, and other departments over street and alley widths and other infrastructure requirements.

Although the initial master plan was created by Sasaki Associates, the LRA eventually brought in a local planning firm, Design Workshop, to do more detailed planning, including connecting Lowry's new roads with the local grid system, locating parks and recreational facilities, and more. One high point of the plan was the decision to extend the Sixth Avenue Parkway—a historic parkway faced by large old houses, trees, and sidewalks that formerly terminated at Lowry—into the new community. Today, along the new section of the parkway, similar plantings,

setbacks, sidewalk widths, and treelines, as well as new large custom homes, help make Lowry feel like an extension of the larger urban community.

INFRASTRUCTURE AND OPEN SPACE

The base infrastructure, which largely was built during the 1940s and 1950s, was exempt from municipal standards and review. At the time of closure, this infrastructure clearly fell short of current standards and thus had to be replaced before it could be accepted into the jurisdictions of Denver and Aurora. Between 1994 and 2006, the LRA spent about \$102 million on infrastructure improvements, including the demolition and recycling of 291 air force buildings as well as concrete roads and runways, and the construction of more than 50 miles (80 kilometers) of new roads and 50 miles (80 kilometers) of new utilities. All utilities have been placed underground.

The LRA's fast-track approach to construction of these urban infrastructure improvements required a huge number of municipal agency approvals. When the burden of submittals for the traditional review stages proved too much for the city of Denver's review process to handle, causing significant delays, all parties involved agreed to the establishment of a customized review process. Approvals thus were obtained within a shorter time frame and required less staff review time. The city also had specific staff members review Lowry submittals.

Concerns about the potential impact of heavy truck traffic on adjacent residential neighborhoods and the large amount of concrete and asphalt demolition required led URS, Lowry's engineering and infrastructure development firm, to suggest on-site aggregate recycling. Lowry's 600,000 tons of crushed runways, tarmac, streets, and building foundations resulted in mountains of materials that were reused as aggregate road base on new roads, at a cost of less than half that of imported material. Aggregate recycling also reduced heavy truck traffic trips by tens of thousands.

Lowry's street and trail systems are designed to decrease car trips and pollution. Four two-lane roundabouts accommodate significant traffic volume while slowing the speed of vehicles traveling through the community. These roundabouts—the first in the Denver area—facilitate traffic movement at intersections and lessen the need for traffic signals. A smart transportation program known as Lowry TransOptions aims to reduce automobile traffic by promoting alternative modes of transportation, including buses, carpools, vanpools, biking, walking, and telecommuting. On-street bike lanes and 12-foot-wide (four-meter-wide) detached sidewalks/bikeways along major roadways and throughout Lowry's park system also encourage walking and biking.

High-tech infrastructure—including broadband telecommunications lines that connect all businesses, residences, and the higher-education campus, as well as a community intranet known as LowryLink—has created a "digital" community at Lowry as well as a bricks-and-mortar one. Lowry is one of the first planned communities in the United States to mandate that such systems be incorporated into new homes.

Lowry's water infrastructure also is trendsetting. Since water is a precious commodity in this part of the country, the area's primary water provider, Denver Water, requires that parks larger than ten acres (four hectares) be irrigated with nonpotable water in the future. Lowry, with its hundreds of acres of irrigated grass, will be a primary user of the nonpotable water system that Denver Water is currently constructing, and Lowry's irrigation systems have been designed to ensure a smooth transition from the current potable source to the nonpotable source.

The LRA views Lowry's 800-acre (324-hectare) parks and open-space system as part of the infrastructure that binds the community together. Residential and commercial neighborhoods and schools were designed around parks and open spaces in ways that emulate Denver's traditional neighborhoods. At buildout, this system will include an expanded golf course, a regional sports complex, passive wetlands, and numerous parks ranging in size from the 50-acre (20-hectare) Great Lawn—the "crown jewel" in Lowry's park system—to neighborhood pocket parks. The 40-foot-high (12.3-meter-high) Westerly Creek Dam offers views of the Front Range and the Denver skyline and is integrated into a regional trail system. Lowry's parks are designed to be sustainable; 35 percent of the total acreage will be devoted to native plants and grasses, and less than half (41 percent) will be covered with sod, all varieties requiring little irrigation. The community's parks and recreational areas are equivalent to 20 percent of all the park space in Denver (and 43 percent of the Lowry site), and will serve the entire region.

FINANCING

Every community facing a military base reuse process must work hard to secure funds for redevelopment, and a variety of financing processes have been used to fund such efforts. For Lowry, the air force and the U.S. Department of Defense (DoD) worked out an economic development conveyance (EDC) in which the federal government acted as the initial banker. The EDC was subordinated where necessary by bonds and bank loans. The land was conveyed in sections.

In July 1995, the LRA purchased 849 acres (343.6 hectares) of Lowry property from the air force through a \$32.6 million EDC. In December 1999, in a precedent-setting move, the DoD agreed to modify the LRA's EDC agreement by reducing the amount due the air force to \$7.98 million—the amount the LRA already had paid. Lowry was the first closed military base to receive this financial relief. The additional 575-acre (233-hectare) golf course/residential parcel was conveyed to the LRA by the air force as a separate, \$5.5 million negotiated sale in January 2006. The initial terms of these sales included no interest and a favorable repayment schedule.

In June 1996, the LRA became the first military base redevelopment agency to sell revenue bonds—\$33 million worth—to finance infrastructure improvements. Its assets—the land, buildings, and money it was earning from rents and sales—allowed the LRA, which had no credit rating, to issue double tax-exempt municipal bonds (essentially nonrated junk bonds) with a high interest rate and high reserve. This, according to Markham, was “the smartest thing we ever did, even with the high rate. It allowed us to get out in front of the deeding process and put our money into infrastructure.” Overall, the LRA raised \$40 million for its infrastructure development and operating budget through two revenue bond sales. In addition, the LRA has received approximately \$65 million in loans from local banks. Both loans and bonds are being paid off as land is sold to residential and commercial developers, and the LRA expects to have paid off all revenue bonds by its first call date in December 2006.

Lowry is a public/private partnership that receives approximately 75 percent of its financing from private sources and approximately 25 percent from public ones, primarily \$72 million in tax increment financing (TIF). In 2000, the city and county of Denver created a special TIF district to defer property tax revenues from the general fund to service Lowry's bond payments. This district will continue until 2020. Lowry has used TIF funding to demolish old buildings and construct parks and a new public elementary school. All borrowed funds are being paid back through property taxes from new residential and commercial development.

The city and county of Denver invested a total of \$1.37 million in Lowry to assist with master planning, infrastructure improvements, marketing, and the development of affordable housing. Additional revenue sources include rents from existing buildings; grants from the U.S. Department of Commerce Economic Development Administration (EDA) for infrastructure improvements (\$6.2 million) and business center infrastructure (\$3 million), with partial matching contributions of \$2 million from the cities of Denver and Aurora; and federal homeless initiative funding (\$5 million).

Overall, the LRA will spend approximately \$550 million preparing the property for residential and commercial development. As a quasi-public agency, the LRA does not figure internal rates of return. Rather, its economic goal—which it has achieved—is for Lowry to be at least income neutral to the Denver and Aurora tax bases. In fact, the redevelopment project is estimated to have pumped \$5.7 billion into the local economy during its first 11 years.

RESIDENTIAL DEVELOPMENT

Land sales to homebuilders and new home construction began in late 1997. The first land deeded to the LRA, and thus the first neighborhood to be redeveloped, was in the southwest section of the property. The LRA put in street infrastructure and delivered finished lots to the three homebuilders that it chose to develop Lowry's first single-family residences and townhouses. Design guidelines required developers to include front porches, recessed garages, and other new urbanist features. Since each of the three builders developed a discrete section of the property, each section had its own identity and was easily distinguished from the others.

In 1999, as it began developing land in the south and northwest parts of Lowry, the LRA started experimenting

with new ways to create diversity. In the Southwest Neighborhood, for example, it sold groups of lots to builders who put up a combination of custom residences, various-sized production homes, townhouses, and luxury apartments, resulting in a mix and a variety of housing types that met with excellent market acceptance. Yet the development still had a subdivision feel; there was little diversity within each block in the first phase of residential development. Nevertheless, the early market acceptance made it easier for the development process to continue to evolve. In the next section of the Southwest Neighborhood to be developed, the LRA decided to do everything it could to create a more fine-grained diversity. It sold small, individual lots to different builders and did not allow any builder to purchase two contiguous lots. While this process was “kind of a nightmare to manage,” notes Force, it did give rise to a diverse neighborhood that proved to appeal to some homebuyers.

Eventually, the LRA began selling land to builders one block at a time, so each street corner features houses constructed by different firms. The design review committee evaluates the entire streetscape—not just the individual houses—to ensure an architecturally diverse streetscape. While this policy bucks the trend in production housing—and resulted in one builder dropping out of the development program at Lowry—it has enabled the LRA to avoid the cookie-cutter feel of look-alike suburban neighborhoods and to create what look like custom neighborhoods with production builders. Neighborhoods consequently look and feel mature relatively early in the development process.

Development of the Northwest Neighborhood continued with a variety of housing types geared to households with a wide range of incomes. Today, it contains both custom and production single-family homes as well as new townhouses and duplexes plus renovated existing military townhomes, which are now operated as mixed-income rental units by the Colorado Coalition for the Homeless. The neighborhood also contains condominiums, patio residences, and some apartments. All of these housing types are integrated throughout the neighborhood; affordable apartments for the formerly homeless and market-rate apartments can be found within approximately 200 feet (60 meters) of custom homes priced at more than \$1 million. This neighborhood is anchored by a large park at its center and also features numerous smaller pocket parks and a recreation center, all of which are linked by pedestrian walkways.

Lowry’s final residential neighborhood is being developed on the community’s east side, between the golf course and the college campus. Although the original master plan called for a golf course community on Lowry’s southeast side, that area later was determined to be within a 500-year floodplain and could not be developed, so instead homes are being built north of the golf course. The East Neighborhood will comprise 700 housing units, including affordable apartments, condominiums, patio homes, duplexes, and single-family residences (including custom houses), and will be anchored by a community park at its center. The neighborhood’s street grid system, which connects with three existing streets to the east of Lowry, was rotated to provide views across the golf course/open space toward the mountains and downtown.

Lowry has demonstrated its commitment to affordable housing since redevelopment began. Denver’s inclusionary housing ordinance requires that at least 10 percent of the community’s housing units be affordable. About 23 percent of Lowry’s 1,900 apartments are leased to households with incomes ranging from below 30 percent to 60 percent of area median income (AMI). Lowry also offers affordable, price-controlled for-sale residences for those earning up to 70 percent of AMI. The Lowry Community Land Trust (CLT), a nonprofit organization created to build and administer up to 300 affordably priced homes at Lowry, already has built and sold 100 units in the Southwest and West neighborhoods at prices ranging from \$115,000 to \$142,000, and another 86 units are planned or underway in the Northwest and East neighborhoods. In addition, another 100 units will be built and sold for about \$150,000 each without deed restrictions. Lowry also contains subsidized transitional housing that helps formerly homeless households make the transition to self-sufficiency. At buildout, the LRA will have contributed more than \$12.5 million to promote and subsidize affordable housing at Lowry and off site in metropolitan Denver.

COMMERCIAL AND INSTITUTIONAL DEVELOPMENT

Development of Lowry’s town center began in July 2001. Although the original master plan called for the area to be developed as a business park, it soon became clear that the community needed a town center that would integrate a variety of uses in a pedestrian-friendly environment. The first step in developing the town center involved transforming a once-residential building that had been converted to military offices back to a residential use, albeit a very different one. The area contained a 361,000-square-foot (33,581-square-meter) structure

originally built in 1937 and 1938 as a 1,000-man dormitory. Although at the time of the base closing the building was being used as the base headquarters, the LRA—facing a difficult commercial market at the turn of the 21st century—decided to sell the structure so that it could be renovated into a 261-apartment project. The building's size and shape allowed for more than 50 different floor plans and some unusual features, including several 1,000-square-foot (93-square-meter) decks. This project, which was completed in 2000, kicked off residential development in the Lowry Town Center District.

By then, Lowry had enough rooftops to attract retailers. The LRA selected Englewood, Colorado-based Miller Weingarten Realty as the retailer developer, and the firm began negotiating with grocery store chains to select an anchor for the planned neighborhood retail center. All of the chains identified as potential tenants wanted to build large stores with frontage on Quebec Street, a location and orientation that would have turned its back on the Lowry community. It was a two- to three-year struggle to attract a firm willing to build a smaller, full-service supermarket within the town center district. By remaining patient, the LRA got what it wanted—a 50,000-square-foot (4,645-square-meter) Albertson's store that now anchors the town center's in-line retail and restaurant offerings. Once the supermarket was built, the town center became an active place, and additional development followed. Today, the town center district contains approximately 500 residential units, schools, parks, and a museum, as well as office, retail, and recreational uses.

As the town center was being developed, additional commercial development took off with the development of an area known as "the Quad," begun in 1998. This area now contains three built-to-suit structures (a 140,000-square-foot/13,006-square-meter building and two 100,000-square-foot/9,290-square-meter ones) occupied by major insurance companies and a telecommunications firm. These suburban-style office buildings kicked off the area's reputation as a commercial location and set the stage for future commercial development with a more urban feel. (Although a planned fourth structure was never constructed, the original name stuck.) Another commercial area, known as PowerHouse Plaza, was developed in response to the market downturn of 2000. Business owners were solicited to build their own 5,000- to 30,000-square-foot (465- to 2,787-square-meter) structures, resulting in the erection of five new owner-developed and owner-occupied buildings.

Lowry's commercial space was a much harder sell than its residential development, largely because the area had no established commercial market, the site was physically unappealing, and there was no direct highway access. Yet five years later, Lowry is seen as a commercial location that offers affordability, convenience, quality of life, nearby housing for employees of all income levels, and easy access via local roadways.

Lowry also is home to a wide range of educational facilities, including nine independent and charter schools, a Denver public elementary school, and the Colorado Free University. A 156-acre (63-hectare) advanced technology campus is home to the Community College of Denver and the Community College of Aurora, which together serve approximately 5,000 students. The campus is owned by the Colorado Community College System, which has experienced major funding cuts in recent years. The state legislature ultimately directed the system to sell a portion of the campus for redevelopment and use the land sales proceeds to build out the remaining land for the Community College of Denver and Community College of Aurora. The college system recently hired a development director who is selecting a land planning/entitlements team and hopes to have a concept plan in place in June 2006. They have agreed to voluntarily present their plans to the LRA and to comply with community design guidelines, and are interested in developing the campus in a way that will integrate it into the community and provide compatible land uses.

Although many of the base's existing buildings have been or will be demolished, a number of historically significant structures have been retained and are being creatively reused. The Aerial Training School and Armaments Training School, for example, has been renovated into an office building now known as Rampart Campus, which features a number of medical offices and a credit union. The base's steam plant has been converted to Steam Plant Lofts, a luxury condominium project. The base commissary became the aforementioned Bonfils Blood Center. Aircraft hangars have been transformed into the Wings Over the Rockies Air and Space Museum, the Big Bear Ice Arena, and a Netflix warehouse/distribution center. The old theater, the officers' club, and the prison all are home to independent schools. The visiting officers' quarters have become the Aspen Village retirement center. The base's meteorology classrooms are now occupied by a Catholic high school. And, most dramatically, the structure that once housed the base liquor store is now the Lowry Community Christian Church.

ENVIRONMENTAL CLEANUP

The primary environmental issue at Lowry is groundwater contamination with solvents, primarily trichloroethylene (TCE), a common solvent used for degreasing engines. Environmental investigations at Lowry began in 1983 with the U.S. Department of Defense Installation Restoration Program. Since 1983, the air force—which, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations, is responsible for all environmental cleanup—has spent approximately \$50 million on environmental investigations and limited cleanup, with the majority of those funds spent after the base closed in 1994. By 2000, however, it was clear that cleanup efforts were at least three years behind schedule. To speed up these efforts, the air force contracted with the LRA in 2002 to manage most of the remaining cleanup. The first of its kind, this privatization agreement has significantly improved the efficiency of the cleanup process. Under the agreement, Lowry Assumption, LLC, manages cleanup activities on behalf of the LRA. The Colorado Department of Public Health and Environment provides regulatory oversight. The air force furnishes funding and Lowry Assumption secures environmental insurance. Since the agreement was signed, a groundwater remediation (both on- and off-site) program has begun, a firing range and fire training zone have been cleaned up, and a landfill has been closed and capped.

During residential construction in the Northwest Neighborhood, builders discovered asbestos in some buried debris from demolished barracks and an old infirmary. All building efforts stopped while an extensive soil sampling effort—in which more than 26,000 samples were tested—was undertaken, and soil was removed from the site if there was any indication of asbestos in the sample. (No asbestos was detected in 93 percent of the samples.) Litigation is underway to determine who will pay for this effort, which cost about \$15 million to implement.

TENANTS, MARKETING, AND MANAGEMENT

The LRA's management philosophy is entrepreneurial and flexible. It conducts an integrated master marketing program for the community, which is funded by fees paid by developers. Residential developers contribute 1 percent of the purchase price of homes sold, while commercial developers contribute 1 percent of the land price. Lowry is a covenanted community, with a master association and several subassociations. Other organizations involved in the community's management include the Lowry Foundation, which funds a public art program, historic preservation efforts, a concert series, and other community enhancements.

In October 1994, as soon as the base closed, the LRA began leasing nearly 900 existing housing units that originally had been built for air force families, and this rental housing was an immediate hit in the marketplace. The first new homes to come on the market also were popular, particularly with people who lived nearby; many in the first wave of homebuyers came from within a one-half-mile (0.8-kilometer) radius of Lowry.

When redevelopment planning began, the upper value of Lowry's new residences was not expected to exceed \$350,000. Some custom homes, however, have sold for \$1 million, and several now under construction are valued as high as \$2 million. The average home price at Lowry in 2005 was \$495,100, compared with the metropolitan-area average price of \$281,200. Single-family home appreciation at Lowry outperformed the metro market from 1998 to 2003; Lowry's detached single-family houses appreciated an average of 11.5 percent per year, compared with a metropolitan-area average of 8.5 percent.

Lowry's commercial uses include a mix of enterprises dominated by office users and medical-related businesses. Distribution and storage businesses, and recreational and neighborhood-serving retail facilities make up a smaller portion of the commercial mix. Although this mix is dominated by small, entrepreneurial businesses, Lowry also is home to several large employers, including the Defense Finance & Accounting Service, Covad Communications, Pinnacle Assurance, and the Bonfils Blood Center. About 42 percent of the community's commercial tenants own their workspace.

With development of the site approximately 80 percent complete, Lowry already serves as a national model for other urban infill and base reuse projects and has received numerous awards in recognition of its redevelopment strategies, sustainable growth strategies, and community-related goals. It has made the transition from an air force base to a diversified, maturing master-planned community where about 25,000 people live, work, and/or go to school each day. Since redevelopment began, Lowry has had a \$5.7 billion gross economic impact on the city

and county of Denver, the city of Aurora, and the greater metropolitan area. As of early 2006, the total market value of residential and nonresidential development at Lowry was \$1.5 billion.

EXPERIENCE GAINED

- “There can be life after closure,” says Markham, who is also president of the Association of Defense Communities, “but it’s not easy.” He suggests that those redeveloping other closed military bases take an entrepreneurial approach and view such projects as unusual, large-scale real estate developments complicated by a variety of factors that typically include government involvement, complex timing issues, and environmental cleanup.
- Phased development enables both the developer and municipal agencies to learn and evolve with the project. When planning the first residential neighborhoods, the LRA wanted to take a new urbanist approach, installing narrow streets and alleys. The city—which hadn’t built any new alleys in many years—insisted on concrete, 25-foot-wide (7.6-meter-wide) public alleys and wider streets than planners desired. One roadway, Rosemary Street, is 50 feet (15.2 meters) wide because the Denver water department required a 25-foot-wide (7.6-meter-wide) paved surface over water lines, and it had to run water lines on each side of the median. Once this infrastructure was built and in use, however, the city was able to see the benefits of alleys (which residents say they love) and recognize the downsides of such wide streets. Water line requirements were revised to allow for narrower roadways and future neighborhoods were developed with more and narrower (18-foot/5.5-meter-wide) private alleys.
- Design guidelines also can and should evolve with the project. Lowry’s initial residential design guidelines required specific percentages of brick facing on each home. As they were revised, the design guidelines became much less prescriptive, focusing on the streetscape rather than each individual building, creating a more diverse, attractive streetscape.
- Not all usable structures can be retained. The air force base contained a number of existing duplex ranch houses that were in good shape, and planners tried to work them into the reuse plan. But sprawling lots and a lack of garages made this impossible, so eventually most of these homes were relocated off site.
- Reuse projects can offer a sense of place that new projects cannot. Lowry’s historic buildings, districts, and symbols are constant reminders of the land’s history.

PROJECT DATA		
LAND USE INFORMATION		
Site area (acres/hectares): 1,866/755		
Percentage complete as of March 2006: 80		
Gross density (residential units per acre/hectare): 10/25		
GROSS BUILDING AREA		
Use	Area Occupied* (Square Feet/Square Meters)	Area at Buildout (Square Feet/Square Meters)
Commercial	1,054,944/98,004	1,460,300/135,662
Educational	707,074/65,687	707,074/65,687
Community uses	1,303,835/121,126	1,589,799/147,692
Total GBA**	3,065,853/284,818	3,757,173/349,041
*As of December 31, 2005.		
**Excludes residential buildings.		
LAND USE PLAN (AT BUILDOUT)		
Use	Area (Acres/Hectares)	Percentage of Site
Residential	400/162	21
Commercial/mixed use	86/35	5
Educational campus/schools	156/63	8

Open space/recreation	800/324	43
Community use/nonprofit organizations	424/171	23
Total	1,866/755	100

RESIDENTIAL INFORMATION*

Unit Type	Total Land (Acres/Hectares)	Floor Area (Square Feet/Square Meters)	Number of Units	Average Initial Sale/Rental Prices
Single-family detached**	247.2/100.0	2,285-4,676/212-434	1,063	\$207,000-\$1,424,509
Single-family attached***	53.2/21.5	1,077-3,283/100-305	495	\$116,250-\$700,000
Lofts/condominiums	20.0/8.1	788-2,660/73-247	320	\$185,000-\$1,200,000
Rental apartments	102.5/41.5	1,339-1,504/124-140	1,839	\$695-\$1,400/month
Total	422.9/171.1	N/A	3,717	N/A

*As of February 2006. Does not include projects not yet completed, or any for-sale projects in the Lowry East Neighborhood.

**Includes custom, semicustom, production, and patio homes.

***Includes townhouses, rowhouses, and duplexes.

OFFICE INFORMATION

Number of owners/tenants: 51

Average tenant size (square feet/square meters): 15,200/1,412

Office Owner/Tenant Size*	Number of Owners/Tenants
Under 5,000 square feet/465 square meters	25
Between 5,000 and 10,000 square feet/465 and 930 square meters	9
More than 10,000 square feet/930 square meters	17
Total	51

*Includes medical offices and outpatient facilities.

RETAIL INFORMATION

Tenant Classification	Number of Stores	Total GLA (Square Feet/Square Meters)
Food service	11	26,280/2,445
Clothing and accessories	2	3,117/290
Shoes	1	1,500/140
Home furnishings	2	3,012/280
Home appliances/music	1	1,200/112
Hobby/special interest	2	2,485/231
Gift/specialty	4	6,654/619
Personal services	7	9,862/917
Recreation/community	1	1,745/162
Financial	1	4,345/404
Other	8	16,539/1,539
Total	40	76,739/7,139

Percentage of GLA occupied: 100

Annual rents: approximately \$23-\$27 per square foot/\$247-\$291 per square meter

Average length of lease: 3 to 5 years

DEVELOPMENT COST INFORMATION

Site acquisition cost: \$12,980,000 (via two economic development conveyances of \$7,980,000 and \$5,000,000)

Environmental investigation/cleanup cost: \$70,000,000
(Approximately \$55 million spent by the air force, \$15 million by the LRA)

Infrastructure improvement costs including demolition: \$102,000,000

Construction costs: \$435,091,000
Materials and soft costs: \$323,402,000
Construction payroll: \$111,689,000

Total Development Cost: \$620,071,000

DEVELOPMENT SCHEDULE

Base closure announced: April 1991
Lowry Community Reuse Plan submitted: November 1993
Lowry Redevelopment Authority formed: August 1994
Base closed: September 1994
Residential leasing started: October 1994
Lowry Master Plan adopted: April 1995
First portion of site purchased: July 1995
Demolition/construction started: March 1996
Zoning approved: June 1996
First new roads opened to the public: January 1997
Residential construction started: October 1997
Commercial construction started: March 1999
Town center construction started: July 2001
Town center opened: October 2002
Projected completion: 2009

DRIVING DIRECTIONS

From Denver International Airport: Take Pena Boulevard north to I-70. Take I-70 west to Quebec Street. Exit at Quebec Street and go south approximately three miles (4.8 kilometers). Enter Lowry by turning left on 11th Avenue, Lowry Boulevard, or Alameda Avenue.

Driving time: Approximately 20 minutes in nonpeak traffic.

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This Development Case Study is intended as a resource for subscribers in improving the quality of future projects. Data contained herein were made available by the project's development team and constitute a report on, not an endorsement of, the project by ULI—the Urban Land Institute.

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