

Spring 2000

An Examination of a Brownfield: The former North Las Vegas armory site

Rebecca L. Fowler
University of Nevada Las Vegas

Follow this and additional works at: <https://digitalscholarship.unlv.edu/thesesdissertations>



Part of the [Environmental Health and Protection Commons](#), [Environmental Monitoring Commons](#), and the [Urban Studies Commons](#)

Repository Citation

Fowler, Rebecca L., "An Examination of a Brownfield: The former North Las Vegas armory site" (2000). *UNLV Theses, Dissertations, Professional Papers, and Capstones*. 292.
<http://dx.doi.org/10.34917/1486474>

This Senior Thesis is protected by copyright and/or related rights. It has been brought to you by Digital Scholarship@UNLV with permission from the rights-holder(s). You are free to use this Senior Thesis in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Senior Thesis has been accepted for inclusion in UNLV Theses, Dissertations, Professional Papers, and Capstones by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.

**An Examination of a Brownfield: The Former
North Las Vegas Armory Site**

A Thesis submitted in partial satisfaction

Of the requirement for the degree of

Bachelor of Arts

In

Environmental Studies

University of Nevada

Las Vegas

By

Rebecca L. Fowler

Spring 2000

Thesis Advisor: Dr. Helen Neill

**An Examination of a Brownfield: The Former
North Las Vegas Armory Site**

Rebecca L. Fowler

Department of Environmental Studies, University of Nevada, Las Vegas, Las Vegas, NV

Abstract

This thesis is a case study of the redevelopment project of the former Armory site in Las Vegas, Nevada, a United States Environmental Protection Agency Brownfield Pilot Project. This investigation uses benefit-cost analysis to determine whether the project is economically feasible. This examination includes a description of the Brownfield program, a description of the site, selection criteria, and the proposed future use of it. The results show that the benefits exceed the costs.

Acknowledgements

I thank Dr. Shawn Gerstenberger for sharing his knowledge, comments, and patience during thesis preparation. In addition, I would like to give special appreciation to Dr. Helen Neill, my thesis advisor, for sharing her knowledge, experience, and technical assistance throughout the development of this manuscript. I would also like to recognize Jeff Dix, Senior Development Officer at the Office of Business Development in Las Vegas. Mr. Dix was very instrumental to me in the process of collecting data relative to the case study.

Table of Contents

Abstract	ii
Acknowledgements	iii
Table of Illustrations	v
<i>I. Introduction</i>	<i>I</i>
A. Background Information on Environmental Laws and Brownfields	2
B. What is a Brownfield?	5
C. The Objective of the Brownfield Program	7
II. Materials and Methods	10
A. Materials	10
B. Methods	11
III. Results	14
A. Benefits	15
B. Costs	17
IV. Discussion	19
A. What do the Results Show?	19
B. Discussion of <u>Table II</u>	21
C. Conclusion	22
D. What can be enhanced in the Brownfield Program?	24
Appendix A: Detailed Description of Armory	27
Appendix B: Map of Site Location	28
Appendix C: Map of Site	29
Appendix D: Property Values of the Site	30
Appendix E: Appraisal Information of the Site	31

Appendix F: Property within ¼ mile radius of Site	32
Appendix G: Brownfield locations Nationwide	33
Appendix H: Brownfields Assessment Pilots within Region 9	34
Appendix I: City of Las Vegas Redevelopment Boundaries	35
Bibliography	36

Table of Maps

Table I: Cost- Benefit Analysis 14

Table II: Redevelopment versus New Development 20

I. INTRODUCTION

The Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) forced companies to cleanup hazardous waste sites. This law was the ‘iron fist’ of the environmental movement, demanding very strict cleanup requirements. In order to accomplish the goals of CERCLA, many businesses were forced to close and properties condemned because of the stringent cleanup requirements. These sites were classified by the government as Superfund sites, and sat idle for years. Many of these abandoned sites, once productive industrial zones are found in highly populated urban areas. These abandoned sites promote urban sprawl, development on the edge of cities as opposed to redevelopment of properties in the interior. In addition, these abandoned sites reduce the value of nearby properties from blight.

Due to the profound effect on local businesses from strict environmental laws such as CERCLA, there is pressure to cleanup and redevelop these sites. Factors such as liability and high cost of cleanup preclude the redevelopment of contaminated sites. One U.S.E.P.A. program called Brownfields is designed to clean up and redevelop contaminated waste sites. This includes actions such as taking these underutilized sites and developing ways to return the properties into productive use.

In the next section of this thesis there is a review of the Brownfields program and environmental laws such as CERCLA and RCRA. Next, this thesis presents background information about a redevelopment project of the former Armory site in Las Vegas, Nevada, a United States Environmental Protection Agency Brownfield Pilot Project. This investigation uses benefit-cost analysis to determine whether the project is economically feasible. Discussion and conclusions follow.

A. Background Information on Environmental Laws and Brownfields

The Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA also known as Superfund) are the two most important Federal laws governing contaminated sites. Superfund governs the cleanup and removal of hazardous wastes at abandoned dumpsites while RCRA focuses on hazardous and solid waste management to ensure that operating facilities do not become Superfund sites. There are many commonalities associated with these two set of laws. Both laws establish remedial goals and set acceptable risk levels through the following: performing site investigations; meeting the cleanup standards; and selecting remedies.

RCRA, implemented by federal legislation was aimed at regulating the treatment and disposal of hazardous substances and addressing environmental damage by requiring the parties responsible for the pollution to pay for its remediation (Wright, 1997). It was the first federal statute to address land pollution specifically as prior environmental legislation focused only on air and water pollution. RCRA, developed in 1976, governs the management of hazardous materials from “cradle to grave”. It imposes a broad-reaching and stringent set of regulations on hazardous waste from its generation onward through transportation, storage, and ultimate disposal. These regulations include placing requirements on all parties affiliated with hazardous waste movement, but especially on transport, treatment, storage, disposal facilities, strict record keeping and reporting, use and labeling of the proper containers, for storage and transport. These requirements are intended to discourage illegal dumping and disposal at outdated facilities.

Other important aspects pertaining to RCRA involves that this law requires facilities to operate groundwater, monitoring systems. Those running the systems must be able to detect migration of wastes into the uppermost aquifer, sample for constituents of concern, and conduct corrective action to stop groundwater contamination in the event it is detected. The goal of these regulations is to prevent uncontrolled releases of hazardous materials to the environment, especially groundwater.

CERCLA, commonly known as Superfund, was enacted by Congress on December 1980, to govern the cleanup of abandoned hazardous waste disposal sites. This is “probably the most influential environmental law affecting whether and how contaminated sites are cleaned up and redeveloped” (Bartsch, 1997). This law is a central factor in determining whether an investor, developer, or local government will clean up and redevelop a parcel of contaminated property. Congress set out to protect the public and the environment from the release of hazardous substances by developing a statute that ensures that the polluter pays for environmental cleanups. It created liability for the owner and operator of any site where there has been a release of hazardous substances. As a result of the CERCLA statute, some say the “Brownfields problem” was created. This liability “occurs when anyone causing any part of the contamination is responsible for the total cost of cleanup of the entire site. It does not need to be apportioned equitably among the various sources of the problem. The law is also ‘retroactive’ in that it holds responsible the conduct of owner/operators whose disposal practices may have been legal at the time they occurred, before CERCLA was enacted (Platt, 1998).”

A tax was imposed on the chemical and petroleum industries, which provided broad federal authority to respond directly to releases or threatened releases of hazardous

substances that may endanger public health or the environment. Over five years, \$1.6 billion in taxes (Sladek, 1999) were collected and deposited into a trust fund (Superfund) for cleaning up abandoned or uncontrolled hazardous waste sites. As a result, CERCLA's liability scheme has improved waste disposal methods and has been instrumental in protecting the environment.

One of the impediments to the CERCLA program is that any owner, even new owners who did not cause any part of the pollution in question are responsible and liable for cleanup costs. This presents a situation which gives new meaning to the term "buyer beware"(Platt, 1998). The liability or cost of defending such claims, in many cases, outweighs the value of the property itself. If the EPA chooses to enforce an action against an owner, the owner will have to sue other "potentially responsible parties" in order to recover their contribution to the cost of the cleanup (Rocco, 1998). These liability problems lead future investors to be apprehensive towards purchasing either existing or potential Superfund sites. Industries do not want to take the risks with respect to contaminated land, especially when there are financial obligations to investors. The result of these regulations is that "the law has limited the market for these types of industrial properties"(Platt, 1998) (Jones, 1995).

There are both positive and negative outcomes with respect to CERCLA and RCRA. As a result of these new laws, many companies went bankrupt in the process of trying to get their industrial facilities up to code. Since many of these sites were highly contaminated, and it was too costly and timely of a matter to clean them up, many of these sites just sat after the foreclosures and condemning occurred. Liability concern kept potential buyers away from these sites, more recently these sites were placed on the

National Priorities List (NPL)-the list of the country's most contaminated sites. These once profitable industrial sites which were vital to the economy of the city, resulted as blights on the surrounding communities. Federal and local governments began realizing that something needed to be done with the sites. These properties were not contributing anything for the well being of the city. (Jones, 1995)

Considering contaminated sites on a more global scale, this problem was and still is contributing to the dilemma of urban sprawl. Urban sprawl is a term used to describe the condition where it is cheaper and easier for developers to build homes and businesses on the edge of urban areas rather than in the central core. It is economically feasible to "bypass these contaminated sites and develop to more enticing greenfields, never developed land-on the urban fringe" (Wright, 1997).

B. What is a Brownfield?

In recognition of this problem, the U.S. EPA developed The Brownfield Re-Development Initiative in January, 1995 (Bartsch, 1997). This is a program encompassing a variety of incentives toward the redevelopment of these properties. A Brownfield is defined by the EPA as: "abandoned, idled or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination (Colangelo, 1998). Most Brownfield sites have low levels of contamination. Hence, these sites are not placed on the National Priorities List (NPL) for the Superfund program. (Sladek, 1999). The NPL presents serious health and safety risks, requiring considerable time and enormous resources to remediate. The balance of affected sites are, characterized as Brownfields. Estimates on the number of Brownfield sites range widely and are based on variable criteria, making identification

and evaluation of the sites very difficult. The most recent data indicates that there are approximately 600,000 sites (Bartsch 1997). A Brownfield site does not necessarily have to be found on the Superfund list, and some may not carry the burden of contamination. The problem with a Brownfield is that they exhibit *real or perceived contamination*. This is enough to scare away any potential investor, who may view the site as a great investment due to the existing infrastructure and often, prime locations. As mentioned earlier, because of the liability and zoning barriers associated with redevelopment, these sites are often not considered for redevelopment. Understanding the issues just mentioned, there is an apparent need for re-using these sites. (See figure A for location of Brownfield pilot projects nationwide)

The perplexities associated with the Superfund program exemplify the importance of the Brownfields program in association with the purpose of remediation within the environment. One of the main challenges to the long-term success of these programs will be to improve the knowledge level of the Brownfield program, and change the opinions of the instrumental officials in this arena. Jeff Dix, Senior Development Officer in the Office of Business Redevelopment in the City of Las Vegas, referred to these officials as the main “players” involved in making these programs work. These “players” include the lenders, lawyers, developers, and real estate professionals associated with the entire process of redevelopment. If these professionals are well informed as well as comfortable with the Brownfield program, they will be more willing to engage their interests toward re-development, which in the long-run will benefit the whole community. If one sees that redevelopment is economically feasible as proven through examples of where the

Brownfield program has worked, they will be more inclined to invest in these properties, given the right incentives and initiatives.

C. The Objective of the Brownfield program.

Brownfields are a nationwide phenomenon that is still not well understood. “They can cover a single property or an entire industrial zone...” (Wright, 1997). Communities across the country face the challenge of putting these idle sites back to productive use. In doing this, these properties have the potential of being a valuable community resource that through redevelopment and reuse could easily bring important benefits to any economically depressed community.

Since Brownfields were recognized as a major problem for cities, Brownfields and their redevelopment issues have received increased recognition and support from government agencies. The support has included financial tools such as EPA pilots grants, loans, and tax incentives, voluntary cleanup programs to expedite the cleanup and approval process, health-based cleanup standards to reduce remediation requirements, and protection for future land owners from cleanup liability. Private sources have also developed tools in the form of products, technologies, and applied procedures for environmentally impaired property.

When the EPA announced the Brownfield Action Agenda in 1995, it outlined four key areas of action for returning Brownfields to productive use, these are: awarding Brownfields pilot grants; clarifying liability and cleanup issues, building partnerships with all Brownfields stakeholders and fostering local workforce development and job training initiatives. These action items make redevelopment of Brownfield sites

economically viable and attractive. By 1996, EPA completed all of its commitments in the Brownfield Action Agenda (Bartsch, 1999). However, it became clear that Brownfields revitalization required broader federal involvement and the inclusion of the private sector and non-governmental organizations. In May 1997 (Bartsch, 1999), EPA expanded its Brownfields initiative by announcing the Brownfields National Partnership Action Agenda, which provides a framework for cooperation among governments, businesses, and non-governmental organizations. It seeks to protect public health and the environment, clean up contaminated properties, build economic viability, and create job opportunities. Under the Brownfields National Partnership, EPA is coordinating activities with more than 20 federal departments and agencies (Colangelo, 1998).

The main objective of these programs is to get the funding available from the government and use it as efficiently and effectively as possible. The EPA has funded Brownfields pilots nationwide. There are many factors involved in the success of a Brownfield project. I will highlight key elements that are important in the progress of these projects. Traditional elements apply to these sites in determining if they are in fact a Brownfield. Some of these elements include: blight, underdeveloped site, and poor or obsolete land use. There are certain criteria these properties must possess to be eligible for the program's benefits. These include historic land use, economic incentives for development exist or can be rationalized, and where the greatest misconceptions regarding environmental conditions remain. The process of becoming eligible for some government funding, be it grants or loans, involves many procedures. The community leaders or governmental agencies within its' own state, or city provide an important role. First, they need to apply basing their eligibility on a 'needs assessment'.

Each applicant, must explain why their community requires funding. Such a proposal contains costs and detailed plans such as an assessment of the site, and the factors involved in the contamination and cleanup.

It is difficult to state exactly how the government makes a final decision as to what pilots will receive assistance. Each case will have its own set of factors separating it from another, making it difficult to find any set rules and criteria which can be applied to all of these contaminated properties. These are factors such as the extent of contamination, the size and scope of the project, and the estimated cost associated with the redevelopment process. Since each state has its own legal definition of a Brownfield and most have their own set of Brownfield- related laws, each case must be evaluated individually. It is up to the community leaders to develop their own ways of using this program to their advantage.

There are some common approaches that have been developed to manage risks throughout the evaluation of a Brownfields Redevelopment project. The typical process includes assessment, planning, site evaluation, risk management, and project implementation. Assessment involves identifying opportunities for re-use, assessing communities needs, and outlining environmental and development issues. The planning stage of the redevelopment process includes developing project goals, reviewing risk- decision matrix, assessing market appeal, and educating property owners and the community about remedial alternatives. Site evaluation includes evaluating environmental and on site development conditions, assessing health risks, and developing site clean-up goals. The risk management step of the process includes duties such as performing a financial analysis and developing a financial package catered to the

individual project. Arranging for liability reduction, negotiating regulatory requirements, and plan site development, are also crucial in this stage of the process. The final step, project implementation includes the actual remediation and construction activities as well as initiating the market plan developed for the individual project (Bartsch,1997).

II. Materials and Methods:

A. Materials:

The data used for an economic analysis in this particular study was collected from various sources throughout the research process. The methods and sources utilized as the ‘measuring’ tools for the research includes a report from one of the consulting firms which did a majority of the evaluation of the contamination that existed on the former Armory site. This “Engineering Evaluation/Cost Analysis Report” was prepared by Ninyo and Moore Geotechnical and Environmental Sciences Consultants (1999).

Other data includes monetary estimates of both the benefits and costs associated with the entire process of developing the former Armory site. Some of these estimates are based on secondary data such as the Clark County Assessor’s tax records for property values.

There is also data included that explains the costs associated with development of vacant land. This data is can be extrapolated from county records, but for the purpose of this research this data was obtained from the Las Vegas Development Agency. The purpose of including this data is to express comparable values applied to the costs associated with development to show the feasibility of the redevelopment project compared to developing “new” land.

B. Methods:

The main focus of this research is to examine whether the Brownfield program at the former Armory is economically viable and desirable to the community by turning environmental liabilities into economic assets. To indicate that this Brownfield site in Las Vegas is an asset, a Cost-Benefit Analysis will be used. In this type of study an evaluation of the benefits are made, then an evaluation of the costs are assessed as well. If the benefits outweigh the costs, then the project meets the criterion for economic efficiency from the perspective of the community. For the purpose of this study the “costs” of redevelopment include the price of land and the hard and soft costs of development, identified by Jeff Dix (2000). The criteria used to measure the “benefits” of redevelopment consist of job creation, estimated property values/land values, and neighborhood quality.

The land cost can vary due to many factors such as: location, quality of land, zoning, and extent of contamination. The ownership of the land is relevant, depending on if the land is private or government property. There are other factors such as the current environmental conditions of the property, as well as potential end use.

Hard costs entail rehabilitation or construction costs related to materials and physical conditions. This includes factors such as: building rehabilitation, roofing repair or replacement, structural repairs, masonry repair or replacement, concrete work, tenant improvements, and demolition work. With respect to the Armory site, this includes interior and exterior demolition. In the case of the Armory the underground storage tanks which have to be removed will apply to the exterior demolition incorporated in the hard

costs. Another portion of the demolition stage of the project includes hazardous materials concerns. This type of cleanup involves the possible storage of paints, solvents, and other materials from the previous use that must be handled properly and their disposal costs must be budgeted for in the planning of the project.

In addition to the hard costs of construction, the price of a redevelopment is often heavily impacted by the soft costs. These costs include: environmental legal work, environmental liens, unpaid real estate taxes and liens, insurance, construction and property management, site security, legal services, environmental engineering, architectural services, engineering services, and marketing/broker commissions.

There are three main objectives in which the benefits of the project will be evaluated. This includes values placed on job creation, estimates on property /land values, and improved neighborhood quality. Some of this data may need to be drawn from existing figures from similar projects.

Data is collected from sources such as the amount of temporary jobs created in the process of the project. These will include those jobs involved in the technical studies, such as the consulting firms involved. The lab technicians costs, will also be included. The amount of permanent jobs retained after the project will also be included in the study. This data will be extrapolated from sources such as the jobs within the community center, and business incubales.

The Property Value Analysis will use the existing data pertaining to the Armory site, and apply it to the similar project of Escobedo Plaza, encompassing similar developmental needs. The data will include the amount of acres restored, using information on comparable values to determine the value of the land in question.

Estimates of surrounding property values as well as similar intended uses apply. Re-use of existing infrastructure will be included if applicable . This will include any plumbing, electrical, or anything that already exists on the site, which is used in the final use of the project. This data will be compared to the costs of developing these needed infrastructure details to the newly developed property of Escobedo Plaza.

A third benefit to consider is improved neighborhood quality. The creation of a community center will fill a once vacant lot contributing nothing positive to the community. According to Neill (2000) monetary values can be placed on this category from non-market valuation techniques.

In addition to the costs and benefits, there are subsidies available that make redevelopment projects such as this one even more financially attractive. This section will present some of the funding available by governmental agencies. These are programs that exist to support the redevelopment process of Brownfield sites. Some of the funding available for redevelopment include: federal programs, community Development Block Grants, economic Development Administration, community Reinvestment act, tax incentives and credits, and the Brownfield Cleanup Revolving Loan Fund (BCRLF). The BCRLF is the funding granted for the redevelopment of the Armory. Many new initiatives aimed at encouraging Brownfield reuse are underway at the federal, local, and state levels. It is relevant to understand that tax benefits will be different for private developers versus city or public developments. This applies to the case study since the site is owned by the City of Las Vegas.

III. Results:

The following chart gives monetary results of the entities that are used to show the benefits versus the costs.

Table I: Cost –Benefit Analysis:

BENEFITS:	Dollar amount:
1. Job Creation	
1. Temporary	+\$360,000
2. Permanent	+\$570,000
2. Property Values	
Armory Site	+\$220,040 (\$439,051.80)
3. Neighborhood quality	N/A
Total:	+\$1,060,040
COSTS:	
1. Hard Costs	-\$84,000
2. Soft Costs	-\$76,582
Total:	-\$160,582
SUBSIDIES:	
BCRLF	+\$200,000
NET AMOUNT:	+\$1,289,458

A. Benefits:

To understand where the values in Table I were derived, first the benefits are explained. Job creation includes categories of temporary and permanent jobs. The purpose of expressing these values is to exemplify the creation of jobs in the Las Vegas economy. In order to give the estimates of these jobs utilized in the process, given is a simple breakdown of professional jobs (those expediting technical jobs and legal assistance needed throughout), and non-professional (janitorial, or the physical cleanup of the site). The way the values were assigned is taking a rough estimate on the temporary jobs. There were approximately three professional positions at \$50,000 totaling \$150,000 and seven at \$30,000 totaling \$210,000. These temporary jobs give a figure of \$360,000. Next, the estimated permanent jobs included in these figures are estimates on jobs possibly created and obtained after the development on the entire project. First, a value of twelve positions are considered in the business center incubator. Assuming that there is at least one position in management at a yearly wage of \$50,000 about eight positions at \$40,000 giving a value of \$320,000, and three janitorial positions at \$25,000 giving a figure of \$75,000. For the next entity, the community center has been given a moderate value of five jobs at income levels of \$25,000, giving a value of \$125,000. As a total account of the temporary and permanent jobs created, a value of \$930,000 is accounted for. These figures are included to show how the economic base of the community will be strengthened. Assuming that the “multiplier effect” (Neill 2000) of approximately 80% of these incomes will be circulated into the economy. The values of the positions were

extrapolated from ([http://hr.ucdavis.edu/comp/PSS range.htm](http://hr.ucdavis.edu/comp/PSS_range.htm), 2000) which displays Professional and Support staff salary ranges in 1999-2000.

Property values which have been assigned through the use of the Clark County tax assessor estimates are \$220,000 which, given that the Armory site is 3.61 acres, each acre would be worth approximately \$60,953. For the purpose of comparing the redevelopment of this site to the new development of already vacant land, a 1.85 acre parcel with an assessed value of \$225,000 is compared. This site is known as the proposed Escobedo plaza, possessing a property value of \$225,000 for 1.85 acres, giving it a value of \$121,621 an acre. This is a development with similar intended uses. This new site is located within the same area, and possesses many of the same beneficial attributes to its development. To understand the possible increase in value for the Armory after the cleanup is accomplished the value of the Escobedo plaza per acre (\$121,621) is used to apply to the value of the Armory at the same value per acre. The new estimate is \$439,051.80. This figure is accomplished by multiplying the new value per acre multiplied by the size of the Armory site ($\$121,621 \times 3.5$ acres). It is worth mentioning that a quick analysis was conducted comparing the vacant land cost of the Escobedo plaza to land costs on the “urban fringe” of the sprawling north-west section of the Las Vegas Valley. A site located at 9499 W. Charleston Blvd, between Charleston and Fort Apache. This vacant land cost was \$182,500 for 2.66 acres. This is a value of \$69,000 per acre compared to price of \$121,621 for the vacant land in the interior of the City. This indicates how much easier and cheaper it may be to buy land and build on the outskirts of town. The consequence of this type of development contributes to the problems discussed earlier, but for the purpose of the benefit-cost analysis this data was not considered.

Neighborhood quality is the third component intended in this research to evaluate the benefits of the redevelopment of the Armory site. Though monetary values for this component can be generated, no monetary values are included for this description. The considerations of this component are of a subjective type. In the process of redeveloping this site the benefits which can be expected can include the elimination of environmental deficiencies and blight including the deletion of inadequate land utilization. Incorporating the proposed use will also strengthen the needed office, retail, and other commercial and residential functions in the redevelopment area. Appendix 4 and map (figure 3) detailing the property zoning within ¼ mile of the Armory site. These figures exemplify the need for the proposed future since only 1% of the area is business services. It will also presumably strengthen and diversify the economic base within the redevelopment area and community by the installation of needed site improvements to stimulate new commercial expansion, employment and economic growth.

B.COSTS

Table I includes a description of the monetary values of the costs. The Hard costs (see Table II for detailed description of each) include expenses of the demolition work at \$56,000 and asbestos abatement at \$28,000. The soft costs included in the redevelopment of the Armory site involve the portion that encompass the Phase I Environmental Site Assessment conducted by the City. The cost of the Phase I study was approximately \$3,900. This assessment indicated the potential for soil and possible groundwater contamination and recommended soil and groundwater sampling. A Sampling and Analysis Plan was prepared for the site in April of 1999 and soil-sampling activities were

performed as part of a Tier I Environmental Site Assessment. This assessment indicated that soil contamination consisted of CERCLA-listed solvents and metals commingled with diesel range petroleum hydrocarbons. A second Sampling and Analysis Plan was produced in July of 1999. Soil and groundwater sampling activities were performed as part of a Tier II Environmental Site Assessment. This assessment indicated that the extent of soil contamination appeared to be limited to about 600 cubic yards of soil in the immediate vicinity of the former hydraulic lift vault. The Tier II assessment also indicated that contaminant constituents had not impacted the groundwater of the subject property. The cost of the Phase II Tier I process is \$14,925, there was also the Phase II Tier II component of this process which costs \$16,600. Other expenses included in the soft costs are the data validation encompassing the environmental legal work necessary in the redevelopment of the project. This costs was approximately \$2,500. Other costs included, contractor fees of \$30,160, consultants fees of \$4,800.00, lab fees of \$1,675 and the environmental engineering and cost assessment fees of \$2,022. All the expenses in the soft costs section add up to \$76,582. Combining both the hard (\$84,000) and soft (\$76,582) costs a value of \$162,582 is produced.

In addition to the “costs” section any financing costs are included in Table I. This included subsidies or loans. One of the attributes to the redevelopment of the Armory is in the financing of it. One of the main highlights making this site economically feasible is funding which was used in the process. There were two grants awarded to the City of Las Vegas. These grants are titled the “Brownfield Demonstration Assessment Pilot Program and “The Brownfield Cleanup Revolving Loan Fund (BCRLF). The first grant is oriented towards the assessment phase of site restoration and development. The second grant is

designed to fund remediation efforts through a loan fund (2%) of \$50,000. This figure is not included in the evaluation. The grant listed in Table I was for the amount of \$200,000 used in the assessment phase of the project. The \$200,000, BCRLF loan bridges the gap between environmental assessment and development of Brownfield properties by providing the capital to fund cleanup efforts for Brownfield sites. It is important to mention that Las Vegas was recognized nationwide, for being the second city to receive this funding, and implement it in a very expedient, and efficient way.

IV. Discussion:

A. What do the results show?

The main focus of this research was to prove the Brownfields program as being economically feasible as applied to the Armory site. The expense criteria of the two sites are shown in Table II for the purpose of comparing the costs associated with redeveloping this site to the development of the vacant land.

Table II: Redevelopment versus New Development

Item	Armory Costs: "A" REDEVELOPMENT	Escobedo Plaza: "B" NEW DEVELOPMENT
Land size	3.61 Acres	1.85 Acres
Estimated size of project:	Est. sq. ft.=60,000	Est. sq. ft. 22,000
Estimated cost of project:	\$6-8,000,000.00	\$1,080,000.00
Assessed \$ of property:	\$220,000/3.61= \$60,952.90 per acre	\$225,000/1.85= \$121,621 per acre
Hard Costs:		
Demolition:	\$56,000.00	N/A
Asbestos Abatement:	+ \$28,000.00 = \$84,000.00	
Soft Costs:		
Legal work:	\$2,500	\$1,600
Consultants:	\$4,800	
Construction & Property Management:	= \$4,000	Building permit: \$3,500 Zoning fees: \$175 Plans check fees: \$2,275 DCP(tortoise): \$1,100 = \$7,050
Engineering/ Architectural: (Civil Engineers)	Phase I : \$3,900.00 Phase II, Tier I: \$14,925.00 Phase II, Tier II: \$ 16,600.00 Cleanup: \$ 36,000 Dust Control: \$ 2,300 Architectural/Contractor: \$30,160.00 Environmental Eng./Cost Assessment: \$2,022 Lab: \$1,675 = \$76,582.00	\$3,500 \$19,000 = \$22,500
Water Fees:		\$ 21,240
Sanitation:		\$36,720
Transportation Fees:		\$1,100
Taxes & Insurance:		\$34,800
Total Hard & Soft Costs:	\$160,582.00	\$159,660.00

B. Discussion of Table II

The total “Costs” in comparison of the two sites, are almost the same. The Armory site’s costs are \$160,582. The Escobedo Plaza costs are \$159,660. That is a cost difference of \$922 for redevelopment over the cost of new development. There are some significant factors in this comparison which played more advantageously toward the redevelopment site. One of these factors is the differentiation in sizes.

In reference to land costs, the property value (re-development versus new land) was derived by comparing square footage of existing site (3.61 acres at \$60,952.90 per acre) compared to the undeveloped land (1.85 acres at \$121,621 per acre). Considering the estimated prices of land for each site it is indicated that if the Armory site is given the same estimated value per acre as the comparative site, such that 3.61 acres x \$121,621 per acre is \$ 439,051. Assuming that after cleanup of the Armory site and all necessary site preps have been established, we can estimate that the Armory site will increase in value by \$219,011. That is an increase as a “vacant” site, considering that both sites have very similar intended uses and benefits. That clearly indicates that redevelopment almost doubles the value of the Armory property.

Job creation (Table I) was a difficult area to analyze. The site under investigation could not be assigned real values, pertaining to the actual amount of jobs created. This is due to the fact that, the project has just finished the cleanup and construction phases only. The planning is still in its infancy. The purpose of including the monetary values was to add to the benefits section of this study. We can assume that both properties will be favorable to the economy, considering that new jobs created in the work force will definitely be a benefit to the community.

It is also important to note that both sites are benefiting from the availability of the redevelopment agencies (see Table I-subsidies section for amount of BCRLF funding incorporated into benefits). The Escobedo Plaza site in comparison falls in the redevelopment area as well. The developer is asking for \$100,000 to be contributed from the redevelopment agency, and \$100,000 from another revolving loan fund. This was not included in the analysis, since the comparison of the sites applied to the “costs” section only.

C. Conclusions

The purpose of this research was to express that redeveloping the Armory site is an economically viable endeavor. There were difficulties associated with finding these results. The original intention of the case study was to prove the feasibility of developing within the urban core compared to development on the urban fringe. This was to include comparable data on costs and benefits related to a site ideally located on what is referred to as the “urban fringe”. I chose the Escobedo Plaza as the site to compare since it conformed to similar redevelopment needs, but still possessed criteria to compare as applied to vacant or “new” land. As far as the values of the benefits are concerned it is important to note that in the case of the Armory, this site possessed an advantage in incorporating the costs, especially in regard to property value. This was an unusual situation where the land was already owned by a government agency so this value definitely added to the benefits section of the Armory and not to the comparable site. Since the Escobedo Plaza proposed site is a private endeavor the cost of the land is an extra expense. Another thing to mention as far as difficulties are associated in this analysis is the fact that future benefits and costs were not investigated in this research.

This is an area that could have had monetary values assigned and incorporated, and if so, may have strengthened the results of this case study due to greater long run benefits.

As a conclusion to this research, the benefits of redevelopment of this Brownfield site outweighed the costs. The main focus of this thesis was to emphasize the importance of redevelopment in the Las Vegas Valley. It is significant to understand that the City of Las Vegas has experienced unprecedented growth in its desirable valley areas. The environmentally-impaired sites in the downtown area have been overlooked by developers. Like many growing cities, development is inevitable. It is often easier, cheaper, and quicker to develop unused land, than to attempt to redevelop existing land uses. With the valley's growth, now at a population of over a million people, redevelopment issues need to be integrated into our communities to preserve the historic integrity of Las Vegas. The link between development and quality of life needs to be examined. As a recommendation, similar redevelopment projects in other areas of Las Vegas should be considered. The issues of Brownfields must be recognized as an important entity of "Smart Growth". Though values were not incorporated in reference to this issue, it is important to mention what "Smart Growth" is. The Smart Growth Network is a coalition of private sector, public sector, and nongovernmental organization (NGO) partners seeking to create smart growth in neighborhoods, communities, and regions across the United States. This involves sharing information about the latest trends in smart construction and deconstruction, learn about innovative financing for infill and Brownfields redevelopment, access tools to evaluate competing development options, search for competitive advantage through the use of sustainable practices, and pilot money-saving investments that reap economic and environmental benefits.

D. What can be enhanced in the Brownfield program ?

Suggestions to what can be improved in the Brownfield program could include features such as joint ventures between the seller and developer, engineer, or contractor. as with the Armory site, since this is a public venture, the tax incentives are more advantageous than it would be for a private developer. Also, the “proposed future use” plays beneficial role in contributing to the to the community. The Armory is proposed to be a community center, so the support (community and governmental funding) may be there more for a public venture such as this one, than it would be for a private business.

In an attempt at more suggested joint ventures, I would also suggest more education and a more user-friendly approach to utilizing the Brownfield programs. Perhaps a “middle-man” type of job classification could be incorporated within the redevelopment agencies. Someone or select departments, with a broad knowledge of real-estate finance, the laws and policies of federal requirements can overcome obstacles to redevelopment.

One last detail to mention is that liability issues need to be re-stated and reformatted to extinguish the atmosphere of distrust associated with the governmental policies and laws. If there is more education and understanding of the Brownfield programs, then there will be more interest displayed in the area of redevelopment. Overall there needs to be a clear knowledge level of the importance of redevelopment. If these issues are viewed as “just a part of the cost of urban blight, suburban sprawl, and technological changes in transport and manufacturing” (Bartsch, 1997) then more of these incentives will be incorporated in the inescapable growth of our cities. Due to the changing profile of American business, from less manufacturing and more service

business, a large number of those changes are inevitable. Just as we, as a society, have learned to recycle more of our waste products, so we must learn to reuse more of our land, buildings, and infrastructure.

Appendix A: Detailed Description of Armory

The following provides a description and relevant information regarding the site and adjoining properties.

A. Site Description and Background

The site is the former location of the Las Vegas Armory for the Nevada Army National Guard. The former Las Vegas Armory is located at 250 North Eastern Avenue in Las Vegas, Nevada, and is the Northwest 1/4 of the Southwest 1/4 of Section 36 in Township 20 South, Range 61 East, Mount Diablo Baseline and Meridian, Clark County, Nevada. The subject site is currently vacant, undeveloped property, with an approximate area of 157,000 square feet.

The site is surrounded by a chain link fence and is bounded to the north by Stewart Avenue, the west by Eastern Avenue, the south by Armory Lane, and the east by the Girl Scout Council building.

A Site Location Map is included as Appendix 2

*Historical operations of the site included storage of petroleum, oils, lubricants, and hazardous materials, and the storage and maintenance of vehicles. The site appears to have been operational for a period of approximately 50 years (mid 1940's to mid 1990s). A site Plan is included as **

B. Geology

The site is located in the Las Vegas Valley, which lies in the southwestern portion of the Great Basin, within the Basin and Range physiographic province. Drilling logs from the Tier II ESA (Kleinfelder, September 1999) indicated that gravelly sand or fill was encountered from ground surface to approximately five feet below ground surface. A silty clay layer was observed between approximately 5 and 10 feet below ground surface, and overlies a silty sand layer.

C. Hydrology

Groundwater in the Las Vegas Valley occurs in three general aquifer systems: shallow aquifer (generally less than 20 feet below ground surface); near-surface aquifers (greater than and up to 200 feet below ground surface); and principal aquifers (greater than 200 feet below ground surface). The principal aquifers can be broken down into three rather distinct zones of confined aquifers including a shallow zone, a middle zone, and a deep zone.

Groundwater monitoring well data reported from monitoring wells MW1 through MW6 during the Tier II Environmental Assessment (ESA), indicated that the groundwater depth was between 9 and 10 feet below ground surface. Groundwater flow direction was reported to be toward the east/northeast at a gradient of approximately 0.01ft/ft. In addition, soil samples were collected to determine the potential for contamination of the groundwater. Although the CERCLA hazardous substance methyl-tertiary-butyl-ether (MTBE) and chloroform were detected in the groundwater in selected monitoring wells, these concentrations were below the NDEP action levels of 20 ug/l and 100 ug/l, respectively. Kleinfelder estimated that approximately 600 cubic yards of soil may contain TPH concentrations above NDEP action levels. This soil is located in the immediate vicinity of the former OMS building and associated service pit.

D. Previous Studies

The Nevada Army National Guard performed an Environmental Baseline survey, dated September 11, 1997, at the Las Vegas Armory site. This document reported that no environmental issues were noted during the survey, aside from asbestos containing materials in the buildings on-site (Converse, 1998).

E. Remedial Alternatives

Biopiles involve the excavation and ex-situ bioremediation of soils from the contaminated area. Costs for this methodology, including removal and disposal of the concrete service pit and backfill with type II fill would range between approximately \$45,000 and \$50,000, or between \$75 and \$83 (EPA 1993) per cubic yard, and would require a minimum of two years for treatment. Aside from the cost and time requirements for this remedial alternative, a dedicated area for biopile treatment must be available to construct the biopile, increasing the difficulty of implementation and potential of exposure to the public.

Kleinfelder assessed the most favorable option to be excavation and off-site disposal. Excavation and Off-Site Disposal entails physical removal of the soils from the subject property and hauling those soils to either a landfill or treatment facility for disposal. This method is often used to remove small areas (generally less 100 cubic yards) of soil with varying degrees of contamination. This method would also entail removal of the concrete service vault and any associated residual contamination. Cost associated with the excavation and off-site disposal would include excavation equipment, soil hauling charges, disposal charges and backfill costs. The cost per cubic yard would be approximately \$72, for a total of \$43,000 for the site.

(Ninyo & Moore Geotechnical and Environmental Sciences Consultants , December

2, 1999)

Appendix B: Map of Site Location

Appendix C: Map of Site

Appendix D: Property Values of Site

Fiscal Year	Land: Parcel #: 139-36-301-001	Improvements	Personal Property	Exempt	Gross Assessed	Taxable Value Land+Imp
1999-00	\$222,040	\$51,950	0	\$271,990	\$271,990	\$777,120
2000-01	\$220,040	\$50,320	0	\$270,360	\$270,360	\$772,460

These tables exhibit the property value of the Las Vegas Armory given by the Clark County Assessor’s information existing on this site. The assessed value is the “worth or value of a piece of property as determined by the taxing authority for the purpose of a property tax (Dryden, 1993)”.

Appendix E: Appraisal Information of the Site

Estimated Lot (width x Depth)	Estimated Size	Original Const. Yr.	Last Sale Price Month/yr.	Land Use	Dwelling Units
	Sq. ft=3.61 Acres	1958	Unknown	Non-Profit Government	

(M.W. Schofield, 2000)

To understand the price per acre of the land the most recent value (\$220,040) is divided by the amount of acreage (3.61) of the Armory site. As follows...

$220,040 / 3.61 = \$60,952.90$ value per acre.

Appendix F: Property within ¼ mile radius of Site

Comparing property within ¼ of a mile (via. Metroscan and regression analysis program through advisement of Prof. Neil) the following is a summary of properties within ¼ of a mile of the Armory site located at 400 E Stewart Ave.

<u>Land use type:</u>	<u>Grand total</u>	<u>Percentage</u>
Vacant	1.82	2%
Res.-single family residence	29.38	30%
Res.- Duplex/Triplex/fourplex & Res. 5 or more residences	7.01+0.86+2.09+5.38= 15.34	7%+1%+2%+6%= 16%
Ind.-Manufacturing	1.16	0%
COM-Motels	5.16	5%
COM-General services	0.24	0%
Com-Professional & Business Service	0.92	1%
Com-Regional Shopping Centers	0.73	1%
Com-Neighborhood shopping centers	7.14	7%
Com-Retail stores & shops	7.06	7%
Com-Restaurants & cocktail lounges	1.13	1%
Com-Automotive	3.91	4%
Com-Service Stations	0.92	1%
Com-Building & Const.	0.47	0%
Ins-schools	17.77	18%
Gov-Govmntl facilities	3.61	4%
Res.-Minor improvements	0.45	0%
Com-Minor improvements	0.14	0%
Grand Total	96.35	100%

Appendix G: Brownfield locations Nationwide

Appendix H: Brownfields Assessment Pilots within Region 9

Appendix I: City of Las Vegas Redevelopment Boundries

Bibliography

- Bartsch, C. & Collation, E. (1997) BROWNFIELDS Cleaning and Reusing Contaminated Properties. Westport, Connecticut.
- Bartsch, C. (Sept. 21,1999). “Financing Brownfield Cleanup and Redevelopment”. <http://www.nemw.org/brownfin.htm>.
- Colangelo, T. (1998) Carol Browner Revisited. Brownfield News. 6(2), 6-7
- Dix, Jeff. (1999-2000) Senior Development Officer at the Office of Business Development.
- Fields, T. Jr. (1999) 1999 Council for Urban Economic Development. U.S.
- Ginsberg, W. (Dec.1999) Managing Director of the Federal Housing Finance Bond. Brownfields 99’.
- [http:// hr.ucdavis.edu/comp/PSSrange.htm](http://hr.ucdavis.edu/comp/PSSrange.htm) (4/17/2000)
- Jones, Stephen C. (1995). “Unless Congress authorizes the EPA to grant developers releases from liability, new inner-city cleanup programs may be of limited value”, Journal of Environmental Economics and Management; 28 (2), 241-55
- Ninyo & Moore Geotechnical and Environmental Sciences Consultants. (December 2, 199). Engineering Evaluation/ Cost Analysis Report
- Platt, Roger (1998) “Recycling Brownfields”. Urban Land, 6 (57)
- Rocco, Jim (1998) “Guiding Blights”. Brownfield News. 6(2), 36-39
- Schofield, Assessor M.W. (2/28/00). Clark County Assessor Files
- Sladek, Susan (Nov. 30, 1999) “Superfund Redevelopment Initiative”. http://www.epa.gov/superfund/programs/recycle/pilot_prg.htm.
- Wright, J. G. (1997). Risks and rewards of Brownfield redevelopment. Cambridge, MA.

