
ECONOMIC BENEFITS OF INVESTMENT TO COMPLY WITH SB 5 REQUIREMENTS

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Eberhardt School of Business

**Center for Business
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Executive Summary

In 2007, the State of California approved SB 5 which requires urban and urbanizing areas within the Sacramento-San Joaquin watershed to achieve a 200-year level of flood protection. Areas subject to SB 5 have until July 2, 2015 to incorporate its requirements into their General Plan and have until July 2, 2016 to adjust local zoning regulations.¹ Thus, in July 2016, areas that have not achieved compliance with SB 5 requirements will essentially be banned from permitting new development or issuing discretionary permits that would significantly change or intensify the use of existing structures. This report estimates the economic benefits of investments to comply with SB 5 in Reclamation District 17 (RD 17).

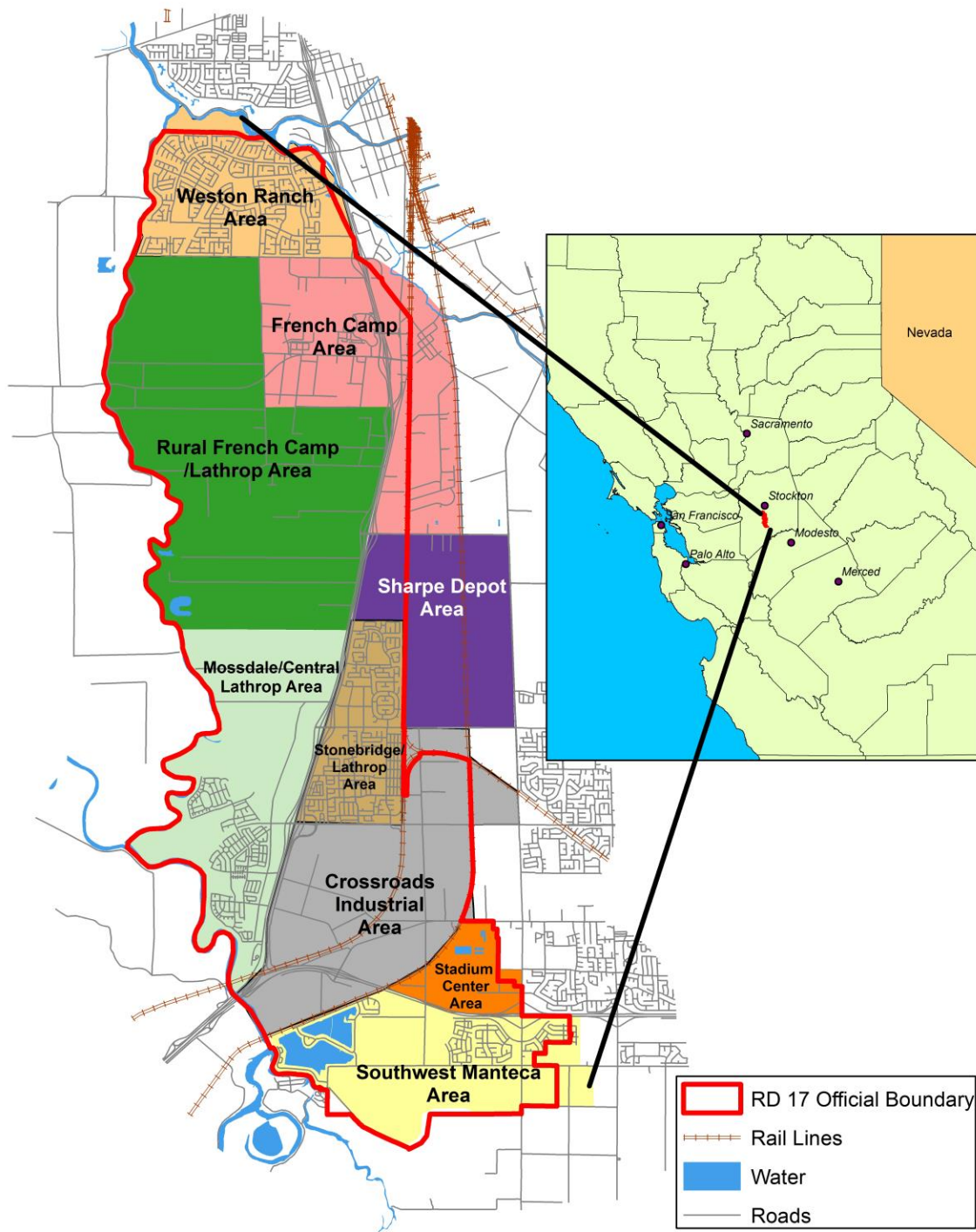
RD 17 is an urbanizing area along the east side of the San Joaquin River that includes portions of the Cities of Lathrop, Manteca and Stockton and unincorporated San Joaquin County (French Camp). Figure E1 illustrates several areas within the boundaries of RD 17 and its location within Northern California. RD 17 is about 60 miles from the San Francisco Bay Bridge and San Jose, and in recent decades, its growth has been driven by residents and businesses from the Bay Area and Silicon Valley seeking lower costs and room for expansion. RD 17 is especially notable for its substantial transportation infrastructure and strategically located commercial and industrial land and has the potential to develop into a major regional employment hub that supports the growth of positive economic integration of the Bay Area and the Central Valley. RD 17 is currently home to about 45,000 residents and 12,000 jobs, including San Joaquin General Hospital and facilities for iconic Bay Area firms such as Tesla and Ghirardelli. If RD 17 is able to achieve SB 5 compliance, current planning documents suggest it could add an additional 32,000 residents and as many as 46,000 additional permanent jobs over the next few decades due to its strategic location at a critical intersection between the Bay Area and Central Valley.

RD 17 is currently certified by the Federal Emergency Management Agency (FEMA) as providing 100-year flood protection. Thus, there are no current flood-related restrictions on development, and homeowners in the area are not required to purchase flood insurance for federally-insured mortgages. However, RD 17 levees do not satisfy California's urban levee design criteria (ULDC) to provide 200-year protection as required by SB 5. The Cities of Lathrop and Manteca have developed a plan to bring the RD 17 levees in compliance with ULDC criteria and avoid the SB 5 restrictions on development that would otherwise begin in July 2016. The proposed project has an estimated construction cost of \$170 million and a proposed 35/65% local/state cost share.²

¹ California Department of Water Resource. "Guidance on General Plan Amendments for Addressing Flood Risk." http://www.water.ca.gov/cvfm/docs/DWR-2014-Guidance_Fact%20Sheet_SEPT2014.pdf

² See Urban Flood Risk Reduction Program RD 17 Phase 4, ULDC Improvements – Design Grant Concept Proposal March 9, 2015. City of Lathrop. Petersen-Brustad Engineering, Inc.

Figure E1: Map of RD 17 Areas and Location within Northern California³



³ The map extends beyond the boundary of RD 17 to include all areas that could be impacted by a RD 17 levee failure as indicated on Figure 3.

The report finds substantial economic benefits from achieving SB 5 compliance. These benefits are classified into the following five categories:

- 1) Flood Risk Reduction to Existing Assets
- 2) Avoided SB 5 Regulatory Costs to Existing Assets
- 3) Economic Impact of Constructing Levee Improvements
- 4) Economic Impact of Expected New Development
- 5) Other Regional and Environmental Considerations

Flood Risk Reduction to Existing Assets

- Reduce expected annual flood property damage by \$24 million each year.
- Prevent disruption to 12,000 current jobs located in RD 17 at hospitals, factories, warehouses, and more.
- Prevent disruption of regional transportation and logistics hub including 53,000 daily truck trips and 160,000 other daily vehicle trips on Interstate 5.
- Protect Public Safety, reducing risk of life loss to 46,000 current residents of the region.

Avoided SB 5 Regulatory Costs to Existing Assets

- Lost property tax revenues of approximately \$2.5 million per year from reduction in value of undeveloped land due to SB 5 restrictions.
- Avoiding a discretionary permit ban from SB 5 will allow reinvestment and reuse of existing industrial and commercial properties and prevent them from becoming decayed and blighted areas over time.

Economic Impact of Constructing Levee Improvements

- Levee construction will create \$362 million in economic output and over 1,900 job years in California.
- Annual averages of 191 jobs and \$36.2 million in economic output from 2016-2025.

Economic Impact of Expected New Development

- As shown in the Table E1 below, SB 5 compliance is expected to allow investment in over 30 million square feet of non-residential space and 10,000 new homes over time.
- Build out of RD 17 according to existing plans could support over 46,000 on-going jobs, and provide housing for nearly 32,000 new residents.
- Estimate \$200 million in new property and sales tax revenue each year after build out.
- Construction of these homes and businesses alone will create \$11 billion in output and 67,000 job years over several decades.

Table E1: Buildout Scenario Results

	Units			Square Footage				Count	
	LD Res. HU	MD Res. HU	HD Res. HU	Commercial	Industrial	Office	Institutional	Employment	Residents
Weston Ranch	399		1,174	656,303				1,641	4,173
French Camp	19			624,108	4,364,621	2,570,789	Not incl VA	12,652	65
Rural French Camp/Lathrop								0	0
Sharpe Depot Area				143,173	3,535,108			2,290	0
Stonebridge/Lathrop Area	60			64,151				160	204
Mossdale/Central Lathrop Area	3,121	589	476	2,610,200		1,427,679		9,979	13,167
Crossroads Industrial Area				951,474	11,769,004			11,217	0
Stadium Center Area							Not incl GW	0	0
Southwest Manteca Area	3,655		737	2,675,734	454,115	172,966		8,174	14,196
Total RD-17 Flood Plain	7,254	589	2,387	7,725,143	20,122,847	4,171,434		46,113	31,804

Other Regional and Environmental Considerations

- Build out of RD 17 concentrates new development around existing transportation infrastructure, reducing the cost and environmental impact of building new infrastructure to accommodate growth that would be displaced by SB 5.
- Environmental values of RD 17 have already been heavily compromised, other nearby floodplain restoration projects offer substantially higher environmental values.
- Space-constrained Bay Area businesses would benefit from strategically located area for needed industrial and commercial investment.
- Plans for large industrial and commercial development in undeveloped space in RD 17 has potential to improve the jobs-housing balance in an economically distressed region characterized by long commutes.

1. Introduction

In 2007, the State of California approved SB 5 which requires urban and urbanizing areas within the Sacramento-San Joaquin watershed to achieve a 200-year level of flood protection. Areas subject to SB 5 have until July 2, 2015 to incorporate its requirements into their General Plan and have until July 2, 2016 to adjust local zoning regulations.⁴ Thus, in July 2016, areas that have not achieved compliance with SB 5 requirements will essentially be banned from permitting new development or issuing discretionary permits that would significantly change or intensify the use of existing structures. This report estimates the economic benefits of investments to comply with SB 5 in Reclamation District 17 (RD 17).

RD 17 is an urbanizing area along the east side of the San Joaquin River that includes portions of the Cities of Lathrop, Manteca and Stockton and unincorporated San Joaquin County (French Camp). Figure 2 illustrates several areas within the boundaries of RD 17 and its location within Northern California. Figure 3 illustrates the areas of greatest flood depth and highlights some of the location of critical facilities and notable employers in RD 17. These include Interstate 5, Union Pacific Railroad, Altamont Commuter Express, San Joaquin General Hospital, San Joaquin County Jail, San Joaquin County Honor Farm, San Joaquin County Juvenile Hall, 8 schools, military facilities such as Sharpe Army Depot, a planned VA clinic, and production and distribution centers for notable corporations such as Tesla, Ghirardelli, Del Monte Foods, Home Depot, In-N-Out Burger, and Diamond Pet Foods.

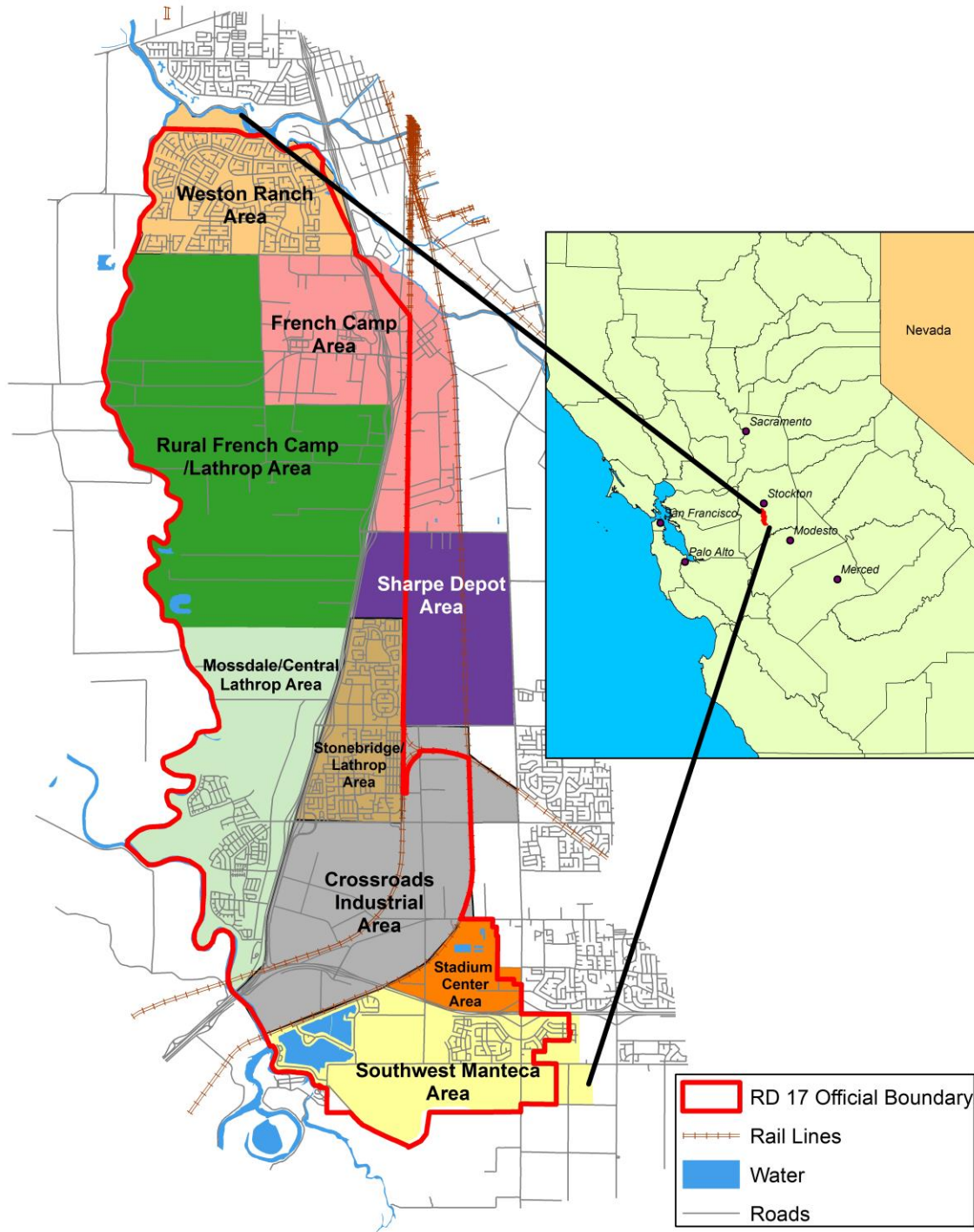
RD 17, which is about 60 miles from the San Francisco Bay Bridge and San Jose, has seen growth in recent decades driven by residents and businesses from the Bay Area and Silicon Valley seeking lower costs and room for expansion. RD 17, notable for its substantial transportation infrastructure and strategically located commercial and industrial land, has the potential to develop into a major regional employment hub that supports the growth of positive economic integration of the Bay Area and the Central Valley.

RD 17 is currently certified by FEMA as providing 100-year flood protection. Thus, there are no current flood-related restrictions on development, and homeowners in the area are not required to purchase flood insurance for federally-insured mortgages. However, RD 17 levees do not satisfy California's urban levee design criteria (ULDC) to provide 200-year protection as required by SB 5. The Cities of Lathrop and Manteca have developed a plan to bring the RD 17 levees in compliance with ULDC criteria, and avoid the SB 5 restrictions on development that would otherwise begin in July 2016. The proposed project has an estimated construction cost of \$170 million and a proposed 35/65% local/state cost share.⁵

⁴ California Department of Water Resource. "Guidance on General Plan Amendments for Addressing Flood Risk." http://www.water.ca.gov/cvfmf/docs/DWR-2014-Guidance_Fact%20Sheet_SEPT2014.pdf

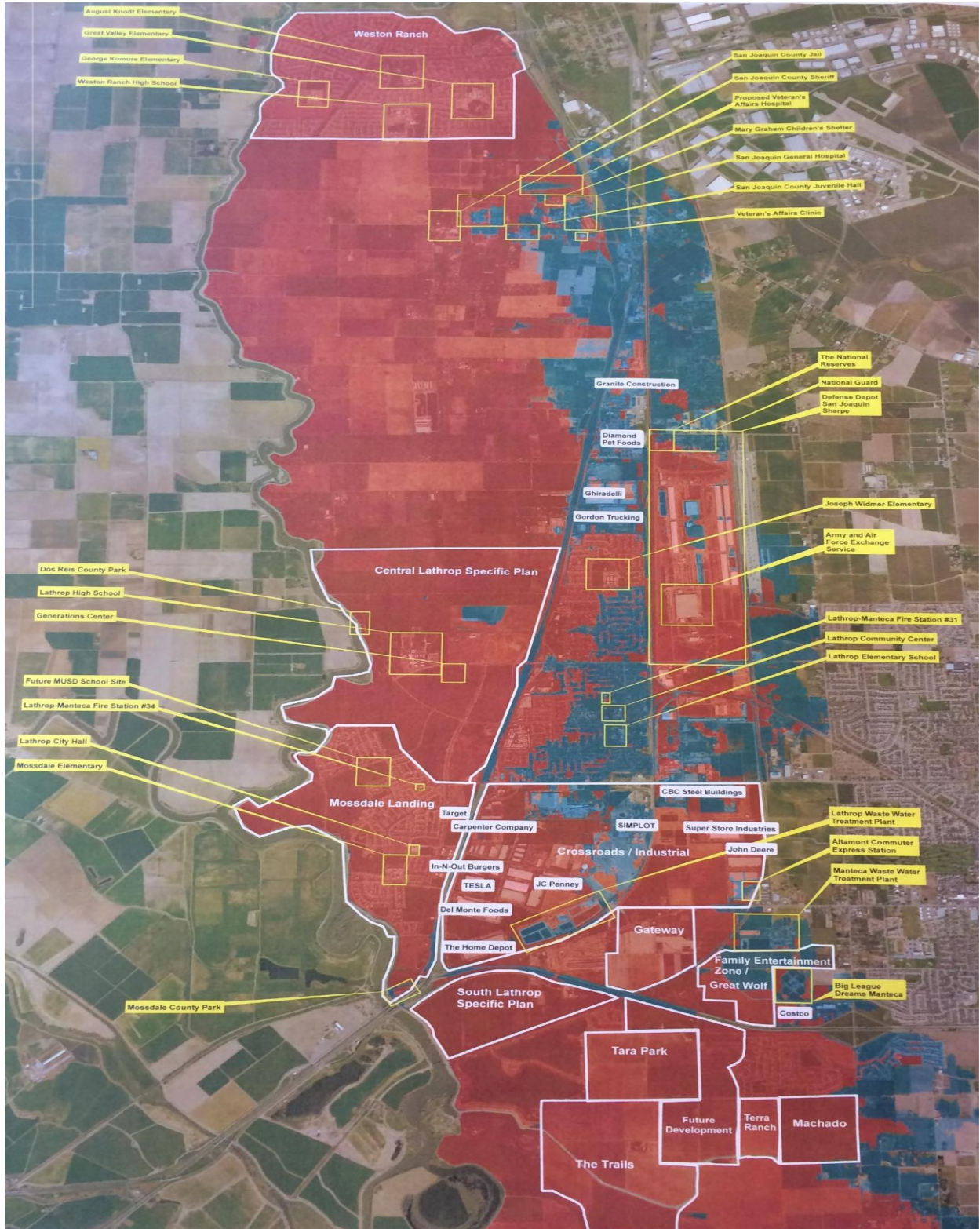
⁵ See Urban Flood Risk Reduction Program RD 17 Phase 4, ULDC Improvements – Design Grant Concept Proposal March 9, 2015. City of Lathrop. Petersen-Brustad Engineering, Inc.

Figure 2: Map of RD 17 Areas and Location within Northern California⁶



⁶ The map extends beyond the boundary of RD 17 to include all areas that could be impacted by a RD 17 levee failure as indicated on Figure 3.

Figure 3: Location of Selected Critical Facilities, and Area of Projected Flood Depth Over 3 Feet (Red), and 0-3 Feet (Blue)



Data on commuting patterns from the Census Bureau’s Local Employment Housing Dynamics program show the importance of RD 17 to the economy of a broad region. Most residents of RD 17 commute outside the area to work, often providing affordable workforce housing for the high-cost Bay Area. Similarly, few of the jobs within RD 17 are held by those living within the reclamation district. Large employers within RD 17, such as the County hospital and jail, provide jobs for residents of surrounding communities such as Stockton, Tracy, and even areas outside San Joaquin County such as Modesto.

Similarly, 2013 IMPLAN data on RD 17 shows the importance of transportation and critical public facilities to local employment. As shown in Table 2, nearly 20% of area jobs are in Trucking, and adding nearly 900 jobs in wholesale trade and over 400 in warehousing, roughly one-third of employment in RD 17 is in transportation, warehousing and wholesale trade.. Given the major concentration of jobs surrounding the County hospital and jail, it is unsurprising that health, education and non-education state and local jobs are also important. Finally, there are a number of manufacturing employers with over 100 jobs, including auto parts (Tesla), and food manufacturing.

Table 2: Total Employment and Top 5 Industries in RD 17 area: IMPLAN 2011

Geographic Profile		
Industry	Employment	Output
Total	11,933	\$2,147,038,149
Truck Transportation	2,260	\$303,445,862
Hospitals	1,292	\$195,902,908
Wholesale Trade Businesses	876	\$142,433,121
State and Local Government, Education (payroll only)	602	\$43,251,774
State & Local Government, Non-Education (payroll only)	578	\$53,459,717

Roughly 8,100 acres in the RD 17 area is already developed and there is approximately 5,300 additional developable acres within the general plans of cities and counties within the area. There is another 7,200 acres of undeveloped land outside the General Plans that is highly unlikely to be developed in the future. Thus, although over half of the planned developable land in RD 17 has been developed, there still is considerable undeveloped land. Much of the undeveloped residential area is in Mossdale/Central Lathrop and Southwest Manteca. However, among the most notable attributes of the RD 17 area are significant areas for industrial and commercial expansion, especially in the Crossroads Industrial Area and French Camp area. The strategic location near existing transportation infrastructure at the crossroads of the Bay Area and Central Valley and significant undeveloped industrial and commercial land gives RD 17 the potential to develop into a jobs center of importance to a broad region.

The rest of this report details the substantial economic benefits from achieving SB 5 compliance in the RD 17 area. It classifies these benefits into five categories:

- 1) Flood Risk Reduction to Existing Assets
- 2) Avoided SB 5 Regulatory Costs to Existing Assets
- 3) Economic Impact of Constructing Levee Improvements
- 4) Economic Impact of Expected New Development

- 5) Other Regional and Environmental Considerations.

2. Flood Risk Reduction to Existing Assets

The U.S. Army Corps. of Engineers (USACE) ⁷ tabulated existing properties within the RD 17 area and estimated expected annual flood damage to property as part of the Lower San Joaquin River Environmental Impact Report released in February 2015. USACE estimated that RD 17 levee system protects 12,147 residential units and 541 nonresidential properties including several critical facilities such as hospitals and schools. USACE estimated the structure and contents value of property at risk for flood damage at \$5.25 billion and that expected annual damages were \$25 million per year under current conditions. USACE estimated expected annual damage would decrease to \$1 million per year in RD 17 if levees were improved to provide 200-year flood protection in compliance with SB 5. Thus, investments to comply with SB 5 are estimated to reduce flood damage by an average of \$24 million per year to existing assets.

USACE expected annual damage calculations only calculate property damage. However, a flood in RD 17 would also disrupt economic activity both inside and outside the RD 17 region in ways that go well beyond property damage. For instance, a significant flood could cause businesses and institutions to close temporarily or disrupt operations in ways that would cause a significant loss of income for the roughly 12,000 jobs that are currently located in the region. Most RD 17 residents commute outside the RD 17 area to work, so that flooding in RD 17 could disrupt their ability to get to work and adversely affect businesses outside the region. Perhaps most importantly, regional transportation could be disrupted by impacts to Interstate 5 or rail lines causing significant delays and increased costs for the regional economy. RD 17 is a major regional logistics hub, and flooding that impacts warehousing and transportation could have wide-ranging effects on businesses throughout the Northern California mega-region.

3. Avoided SB 5 Regulatory Costs to Existing Assets

Failure to comply with SB 5 would not only prevent new development, the regulations would also impact the current value of existing assets and their future use. Of particular concern to local governments are property tax assessments. There is a significant amount of undeveloped land in the area that would see its tax assessed value decrease to agricultural value. An examination of a sample of tax assessment records in the area shows average assessed values for undeveloped land has an average assessed value of \$52,000 per acre whereas agricultural land without development potential is assessed at about \$4,000 per acre. We estimate 5,300 acres are developable land without SB 5 restrictions, which would represent about a \$250 million decrease in assessed value and roughly \$2.5 million

⁷ 3 USACE, San Joaquin River Basin, Lower San Joaquin River, CA, Draft Integrated Interim Feasibility Report / Environmental Impact Statement / Environmental Impact Report, Economics Appendix, Tables 3-1 and 3-2, February 2015

decrease in annual property tax revenue if RD 17 is unable to comply with SB 5 and the land reverts to agricultural use.

While much of the focus and intent of SB 5 was to prevent urban residential development in areas without urban flood protection, the language of SB 5 goes beyond permitting new houses. Specifically, SB 5 contains the following language regarding discretionary permits,

“No city or county can approve any discretionary permit or other discretionary entitlement, or any ministerial permit that would result in the construction of a new residence for a project that is located within a flood hazard zone unless certain flood protection related findings can be made.”⁸

This passage has been subject of much debate regarding what has become known as the “comma issue.” Many local governments have argued that the comma was inadvertent, and that the restrictions on discretionary permits should only apply to new residences just as the ministerial permits. However, after a series of workshops on SB 5 implementation, the Department of Water Resources in November 2013 clarified the ban was for all discretionary permits, both residential and non-residential.⁹ Discretionary permits include things such as site plan reviews, conditional use permits, and variances. Blanket restrictions on these type of permits could have a chilling effect on attempts to increase jobs in the area, even when attempting to attract employers into existing commercial and industrial structures as new businesses often require some site changes that would require discretionary permits. The discretionary permit ban could result in extended vacancy and deterioration of commercial and industrial properties in the RD 17 area resulting in a loss of jobs and blight.

4. Economic Impact of Constructing Levee Improvements

The economic impact analysis of the proposed levee improvements is based on the construction and planning costs of the levee improvements. Expenditures for the RD-17 levee improvements were obtained from a review of Phase 4 of the Urban Flood Risk Reduction Program RD-17 Concept Proposal. Table 3 of this document lays out itemized expenditures by year from 2005 through 2019. The 2019 costs are solely for construction which is assumed to last for six years. Therefore the \$128 million in construction costs is evenly divided over those six years when input into the model. The model costs were assumed to be spread out over the ten years from 2015 through 2024. Table 3 shows the levee improvement costs.

⁸ Department of Water Resources. Implementing California Flood Legislation into Local Land Use Planning: A Handbook for Local Communities. October 2010.

⁹ Department of Water Resources. “Urban Level of Flood Protection Criteria.” http://www.water.ca.gov/floodsafe/urbancriteria/ULOP_Criteria_Nov2013.pdf

Table 3: Levee Improvement Costs

Expenditure	2015	2016	2017	2018	2019-2024	Total Project
Administration-Project Levees	\$781,500	\$781,500	\$781,500	\$781,500	\$0	\$3,126,000
Planning-Project Levees	\$3,123,000	\$3,123,000	\$0	\$0	\$0	\$6,246,000
Environmental & Permitting-Project Levees	\$0	\$344,333	\$1,377,332	\$1,377,332	\$0	\$3,098,997
Geotechnical Engineering-Project Levees	\$0	\$248,800	\$995,200	\$0	\$0	\$1,244,000
Surveying & Civil Engineering-Project Levees	\$0	\$1,623,600	\$6,494,400	\$0	\$0	\$8,118,000
Real Estate Acquisition	\$0	\$0	\$3,651,429	\$4,868,572	\$0	\$8,520,001
Administration-Dryland Levees	\$277,500	\$277,500	\$277,500	\$277,500	\$0	\$1,110,000
Planning-Dryland Levees	\$1,109,500	\$1,109,500	\$0	\$0	\$0	\$2,219,000
Environmental & Permitting-Dryland Levees	\$0	\$123,333	\$493,332	\$493,332	\$0	\$1,109,997
Geotechnical Engineering-Dryland Levees	\$0	\$89,000	\$356,000	\$0	\$0	\$445,000
Surveying & Civil Engineering-Dryland Levees	\$0	\$577,000	\$2,308,000	\$0	\$0	\$2,885,000
Real Estate Acquisition	\$0	\$0	\$360,000	\$480,000	\$0	\$840,000
Administration-Dryland Levee Extension	\$66,252	\$66,252	\$66,252	\$66,252	\$0	\$265,008
Planning-Dryland Levee Extension	\$264,500	\$264,500	\$0	\$0	\$0	\$529,000
Environmental & Permitting-Dryland Levee Extension	\$0	\$29,444	\$117,776	\$117,776	\$0	\$264,996
Geotechnical Engineering-Dryland Levee Extension	\$0	\$21,200	\$84,800	\$0	\$0	\$106,000
Surveying & Civil Engineering-Dryland Levee Extension	\$0	\$137,600	\$550,400	\$0	\$0	\$688,000
Real Estate Acquisition	\$0	\$0	\$102,858	\$137,144	\$0	\$240,002
Construction Phase/Project Implementation	\$0	\$0	\$0	\$0	\$127,804,000	\$127,804,000
	\$5,622,252	\$8,816,562	\$18,016,779	\$8,599,408	\$127,804,000	\$168,859,001

Source: Urban Flood Risk Reduction Program RD 17 Phase 4, ULDC Improvements – Design Grant Concept Proposal, March 9, 2015

When inputting these costs into the economic impact model, expenditures were input at 2015 prices for all years. However, the results are adjusted to event year dollars using IMPLAN’s industry specific output deflator. The value of the output deflator differs for each industry effected by the direct inputs. The economic impact analysis was done using the IMPLAN model. The IMPLAN software creates detailed social accounting matrices and multipliers of the California economy that enable in-depth examinations of the economic impacts of the proposed levee improvements.

IMPLAN was developed in the late-1970s by the United States Forest Service and researchers at the University of Minnesota. The software was initially based on input-output accounts whose analysis was pioneered in the Nobel Prize winning work of Wassily Leontief. Currently, IMPLAN is among the most widely used economic impact modeling systems. It provides a transparent and detailed approximation of economic impacts that is widely utilized by businesses and government agencies.

The full range of economic impacts that result from the expenditures, called the **Total Effect**, is the sum of the direct, indirect, and induced effects:

- **Direct Effects** are the changes in jobs and income directly supported by the levee improvements such as jobs held by the construction workers, engineers and administrative staff.
- **Indirect Effects** represent the iterative impacts of inter-industry transactions as supplying industries respond to demand from the sector(s) where the initial expenditures occurred. An example of an indirect impact would be employees of a construction material wholesaler.
- **Induced Effects** reflect the expenditures made by recipients of wages in the direct and indirect industries. Examples of induced impacts include employees’ expenditures on items such as retail purchases, housing, food, medical services, banking, and insurance.

In this analysis, the total, direct, indirect, and induced effects are reported by output, labor income, and employment:

- **Output** represents the value of industry production. It accounts for the total change in the value of production in an industry for a given time period. Output varies as a measure across industries. For manufacturers, the value of production is sales plus or minus any change in inventories. For service sectors, the value of production equals their sales. While for retail and wholesale trade, the value of production equals their gross margin and not their gross sales.
- **Labor Income** is the sum of employee compensation and proprietor income. Employee compensation includes wages, salaries, benefits, and all other employer contributions, while proprietor income consists of payments received by self-employed individuals and unincorporated business owners.
- **Employment** is the number of full- and part-time jobs based on an annual average of monthly jobs. In other words, employment is measured as a full year of employment. Thus, 3 temporary jobs that last for 4 months are reported as 1 job.

Indirect and induced effects are calculated using regional purchase coefficients calculated by IMPLAN, and thus impacts do not include spending outside of the region of analysis. For this study the region of analysis was chosen as the State of California because many suppliers of building inputs and employees could be located outside of San Joaquin County.

Impacts were calculated by year of the project. Therefore the model was run for the \$5.6 million spent in 2015, the \$8.8 million spent in 2016 and so on through 2024. The inflation adjusted results were then aggregated and averaged to show the average annual effects and the total project effects. Model inputs are presented in Table 4, while Table 5 shows the total dollar amount modeled in each year.

Table 4: Model Inputs

Sector	Description	Value
58	Construction of other new nonresidential structures	\$127,804,000
449	Architectural, engineering, and related services	\$26,981,008
533	Employment and payroll of local govt, non-education	\$4,473,990
Total Expenditures Modeled		\$159,258,998

The total \$170 million cost estimate includes slightly more than \$10 million in costs associated with the purchase of land for levee improvements. Land costs are a purchase of an existing asset, and are excluded from the economic impact estimates because they do not create new economic output. As such, the total economic impact model input is approximately \$159 million instead of the total project cost of just under \$170 million.

Table 5: Modeled Yearly Expenditures

	2015	2016	2017	2018	2019-2024
Expenditures	\$5,622,252	\$8,816,562	\$13,902,492	\$3,113,692	\$21,300,667

The overwhelming majority of expenditures, \$106 million, occur in the second half of the project lifecycle. However, expenditures do begin in 2015 at over \$5.5 million and grow to \$13 million by 2017.

Table 6 presents an overview of total economic impacts in California attributable to upgrading the levees in RD-17.

Table 6: Overview of Levee Improvements State-Wide Economic Impact

Annual Average Economic Impact			
Impact Type	Employment	Labor Income	Output
Direct Effect	90.2	\$7,691,590	\$18,174,144
Indirect Effect	43.8	\$2,932,253	\$8,437,396
Induced Effect	57.0	\$3,278,950	\$9,634,743
Total Effect	191.0	\$13,902,793	\$36,246,283
Total Economic Impact			
Impact Type	Employment	Labor Income	Output
Direct Effect	902.1	\$79,164,282	\$181,741,445
Indirect Effect	437.9	\$29,322,531	\$84,373,962
Induced Effect	570.0	\$32,789,500	\$96,347,437
Total Effect	1,910.1	\$141,276,313	\$362,462,844

The improvement of the levees in RD 17 is estimated to directly support a total of 1,910 jobs over the course of ten years, or 191 jobs per year when including the multiplier effects. These 191 average yearly jobs equate to nearly \$73,000 annually per job in total compensation for total labor income of \$141 million in the State over ten years. Total output related to the levee improvements is \$362.4 million over the course of ten years or just over \$36 million per year.

Table 7: Levee Improvement Impacts by Year

Year	Total Employment	Total Output
2015	88.9	\$12,691,708.00
2016	138.6	\$20,106,677.00
2017	216.8	\$31,831,476.00
2018	46.3	\$6,556,828.00
2019	236.6	\$46,127,028.00
2020	236.6	\$47,108,365.00
2021	236.6	\$48,114,016.49
2022	236.6	\$49,144,572.64
2023	236.6	\$49,970,455.99
2024	236.6	\$50,811,715.42

The largest economic impacts occur in the construction years from 2019 through 2024. Because the total construction cost is evenly distributed throughout the six year of construction the total employment effect remains constant, but the total output increases in each construction year because of adjustments made to reflect current dollars.

5. Economic Impact of Expected New Development

The levee improvements made to comply with SB 5 would facilitate continued physical infrastructure investments in the RD 17 region. This section explores a buildout scenario created based on the general plans for the cities of Lathrop, Manteca and Stockton as well as design documentation for proposed housing and commercial developments. RD 17 and the surrounding area were broken into nine regions to enhance the analysis. These regions are: Weston Ranch, French Camp Area, Rural French Camp/Lathrop Area, the Sharpe Depot Area, the Stonebridge/Lathrop Area, the Mossdale/Central Lathrop Area, the Crossroads Industrial Area, the Stadium Center Area, and the Southwest Manteca Area. The buildout scenario does not include the proposed Great Wolf Resort in Manteca or the Veterans Administration Facility in French Camp. See Figure E1 or 2 for a map of where these regions are located.

Crossroads Industrial is the only area solely zoned for commercial use, although currently Rural French Camp, Sharpe Depot and Stadium Center do not have any proposed residential developments. Most of the other areas within RD17 are a mix of residential and commercial zones with most of the commercial zones being neighborhood commercial which would be filled with retail space and small office buildings.

Analysis of this buildout scenario was done using the IMPLAN software with the same definitions and assumptions as described in the section on the impacts of levee construction. Buildout expenditures were created for each of the six types of buildings (low density residential, medium density residential, high density residential, commercial, industrial and office) proposed in RD 17 using specific assumptions about units, square footage and costs. Table 8 below summarizes the first two of these assumptions in each of the regions of RD 17.

Table 8: Number of Housing Units and Commercial Square Footage

	Units			Square Footage			
	LD Res. HU	MD Res. HU	HD Res. HU	Commercial	Industrial	Office	Institutional
Weston Ranch	399		1,174	656,303			
French Camp	19			624,108	4,364,621	2,570,789	
Rural French Camp/Lathrop							
Sharpe Depot Area				143,173	3,535,108		
Stonebridge/Lathrop Area	60			64,151			
Mossdale/Central Lathrop Area	3,121	589	476	2,610,200		1,427,679	
Crossroads Industrial Area				951,474	11,769,004		
Stadium Center Area							
Southwest Manteca Area	3,655		737	2,675,734	454,115	172,966	
Total RD-17 Flood Plain	7,254	589	2,387	7,725,143	20,122,847	4,171,434	

The definition of low, medium, and high density housing differs by municipality, however, the generalized rates used for this analysis is five units per acre for low density housing, eight units per acre for medium density housing, and 20 units per acre for high density housing. Medium and high density housing is usually multifamily housing such as condominiums or apartment buildings. The number of new residential units was determined using the city and regional development plans of the areas within RD17 and augmented with parcel information from the County Assessor’s Office.

Square footage of commercial real estate was determined using acreage data obtained from the plot maps from the County Assessor’s Office. Using this data and information from the South Gateway report and the master plans of Central Lathrop and Mossdale on the ratio of plot size to building square footage the amount of square footage was calculated.

5.1 Economic Impact of Constructing Future Development

Cost data per unit and square foot was obtained from RSMeans with geographic specific costs associated with Stockton, California. Housing units were converted into square feet using data from the National Association of Home Builders, the Building Industry Association of the Greater Valley and the Washington Post. Low density housing was assumed to be 2,070 square feet, medium density housing was assumed to be 1,400 square feet and high density housing was assumed to be 1,074 square feet. Table 9 below shows these costs by building type.

Table 9: Input Costs per Square Foot

LD Housing	MD Housing	HD Housing	Commercial	Industrial	Office	Institutional
\$115.40	\$164.23	\$141.24	\$112.64	\$95.88	\$147.63	\$175.07

The cost per square foot shown in Table 9 are higher than are generally estimated solely for construction costs. These higher costs per square foot reflect the inclusion of soft costs such as permits, site development costs and underground utilities into the construction cost per square foot. Combining the information presented in Tables 8 and 9 results in the inputs used in computing the economic impacts of the buildout of the RD-17 region. This is presented in Table 10.

Table 10: Model Inputs

Property Type	Sector	Description	Value
Low Density Housing	59	Construction of new single-family residential structures	\$1,732,821,012
Medium Density Housing	60	Construction of new multifamily residential structures	\$135,424,058
High Density Housing	60	Construction of new multifamily residential structures	\$362,088,231
Commercial	57	Construction of new commercial structures, including farm structures	\$870,160,107
Industrial	53	Construction of new manufacturing structures	\$1,929,378,570
Office	58	Construction of new nonresidential structures	\$615,828,801
Total Expenditures Modeled			\$5,645,700,779

Table 11 presents an overview of total economic impacts in California attributable to the full buildout scenario in the RD 17 region.

Table 11: Overview of RD 17 Buildout Scenario State-Wide Economic Impact

RD-17 Total Economic Impact			
Effect Type	Employment	Labor Income	Output
Direct Effect	33,341	\$2,395,952,602	\$5,645,700,987
Indirect Effect	14,520	\$842,675,241	\$2,538,981,501
Induced Effect	18,773	\$979,404,352	\$2,869,754,854
Total Effect	66,635	\$4,218,032,195	\$11,054,437,342

The RD-17 buildout scenario is estimated to directly support 33,341 jobs, and a total of over 66,500 jobs when including multiplier effects. These 66,500 jobs each average \$63,300 per year in total compensation for a total labor income of \$4.22 billion in the State. The total output related to the buildout scenario is \$11 billion.

Tables 12 through 14 show the specific employment, labor income and output impacts of each of the six proposed property types to be constructed in the RD 17 area. The direct, indirect, induced and total economic impacts are shown for each property type.

Table 12: Employment Impacts by Property Type

Effect Type	Employment					
	LD Housing	MD Housing	HD Housing	Commercial	Industrial	Office
Direct Effect	9,841	651	1,742	5,150	12,735	3,222
Indirect Effect	5,921	643	1,718	1,694	2,906	1,639
Induced Effect	5,376	464	1,241	2,858	6,856	1,979
Total Effect	21,138	1,758	4,701	9,702	22,496	6,840

Direct job creation is estimated to be largest for the industrial properties at just over 12,500 jobs. This is approximately 3,000 jobs more than low density housing. Total job creation is still largest for the industrial properties at approximately 22,500, although by much less as the multiplier for single density housing is larger than for manufacturing structures.

Table 13: Labor Income by Property Type

	Labor Income					
Effect Type	LD Housing	MD Housing	HD Housing	Commercial	Industrial	Office
Direct Effect	\$621,584,874	\$48,811,962	\$130,510,319	\$376,844,160	\$975,860,807	\$242,340,479
Indirect Effect	\$306,686,710	\$31,326,979	\$83,760,084	\$115,665,433	\$206,028,332	\$99,207,702
Induced Effect	\$280,431,861	\$24,203,822	\$64,714,641	\$149,119,440	\$357,685,347	\$103,249,242
Total Effect	\$1,208,703,444	\$104,342,764	\$278,985,044	\$641,629,033	\$1,539,574,486	\$444,797,423

Aggregate labor income is largest for industrial properties at over \$1.5 billion, followed by low density housing at \$1.2 billion and commercial properties at \$641 million. Average yearly total compensation is largest for industrial properties at over \$68,000, followed by commercial properties at over \$66,000 and office buildings at \$65,000.

Table 14: Output by Property Type

	Output					
	LD Housing	MD Housing	HD Housing	Commercial	Industrial	Office
Direct Effect	\$1,732,821,076	\$135,424,063	\$362,088,244	\$870,160,139	\$1,929,378,641	\$615,828,824
Indirect Effect	\$881,829,764	\$93,841,680	\$250,907,914	\$363,836,596	\$640,095,431	\$308,470,116
Induced Effect	\$821,554,252	\$70,903,856	\$189,578,219	\$437,020,982	\$1,048,189,041	\$302,508,505
Total Effect	\$3,436,205,092	\$300,169,599	\$802,574,377	\$1,671,017,718	\$3,617,663,112	\$1,226,807,445

Total output related to the buildout scenario is estimated to be largest for industrial properties at \$3.6 billion, followed by low density housing at \$3.4 billion and commercial \$1.6 billion. Also breaking \$1 billion in output is office buildings at just over \$1.2 billion.

5.2 On-Going Economic Benefits of Future Development

In addition to the economic impacts of the construction of this buildout scenario there is the added benefit of continuous economic activity in the RD 17 region.

Table 15: Employment Generation and Resident Increase

Area	Employment	Residents
Weston Ranch	1,641	4,173
French Camp	12,652	65
Rural French Camp/Lathrop	0	0
Sharpe Depot Area	2,290	0
Stonebridge/Lathrop Area	160	204
Mossdale/Central Lathrop Area	9,979	13,167
Crossroads Industrial Area	11,217	0
Stadium Center Area	0	0
Southwest Manteca Area	8,174	14,196
Total RD-17 Flood Plain	46,113	31,804

As highlighted in Table 15, development from the buildout scenario is estimated to create over 46,000 jobs and add almost 32,000 residents to the RD 17 region. The estimated number of new jobs is based on the Urban Land Institute's Office Development Handbook (1998) which defines the number of

employees per square foot of nonresidential use buildings by type of building. The number of new residents was calculated using a rate of 3.4 residents per low density housing unit and 2.4 residents per medium and high density housing unit. These rates were obtained by adjusting local project plans by Census Bureau data on the number of residents per household

The largest concentration of employment is located in the French Camp Area because of its large area that is zoned for non-residential development. This area translates into potential development of 4.3 million square feet of industrial space and 2.5 million square feet of office space and totals 12,653 jobs. The Crossroads Industrial Area is estimated to generate the second most jobs as the area is zoned almost exclusively for general industrial purposes with small pockets of neighborhood commercial use. Other areas which are estimated to generate significant employment are Mossdale/Central Lathrop and Southwest Manteca both of which contain both commercial and residential components.

There are only three areas which are estimated to see a large increase in population: Southwest Manteca, Mossdale/Central Lathrop, and Weston Ranch which are estimated to see a population increase of 14,196, 13,167 and 4,173 respectively. While residential development potential exists in the Stonebridge/Lathrop and French Camp areas, neither of these have extensive housing developments and are accordingly expected to see small population increases.

The development of RD17 will generate significant revenues for the cities of Lathrop, Manteca, and Stockton as well as San Joaquin County and the State of California as a whole. These include a range of General Fund payments and dedicated fund payments such as those to RD17 itself, Street Funds and Fire Districts in the area. While comprehensive estimation of all these revenue sources is beyond the scope of the present analysis two major revenue sources, annual property tax revenue and annual sales tax revenue from the development of currently vacant parcels have been analyzed.

Results are presented in Table 16 across the seven areas of RD17 where development is potentially impacted by SB5. The largest investment in physical capital will occur in the Mossdale/Central Lathrop where over \$2 billion in residential and non-residential assets are estimated to be developed. In total, we estimate that across RD17 there is some \$6.7 billion in additional property that may be developed if the levee investments to upgrade RD17 to 200 year protection are made. That increase in assessed value will generate \$67.4 million in annual property tax revenue.

Table 16: RD 17 Buildout Fiscal Impacts (\$ Millions)

	Weston Ranch	French Camp	Sharpe Depot Area	Stonebridge /Lathrop Area	Mossdale/Central Lathrop Area	Crossroads Industrial Area (Incl. S. Lathrop SP Values)	Southwest Manteca Area	Total All Areas
Total Assessed Value	\$451.0	\$998.0	\$313.9	\$34.4	\$2,090.9	\$1,082.3	\$1,767.7	\$6,738.1
Total Annual Property Tax	\$4.5	\$10.0	\$3.1	\$0.3	\$20.9	\$10.8	\$17.7	\$67.4
<i>New Resident Local Retail Spending Subtotal</i>	\$15.8	\$0.3	\$0.0	\$0.9	\$55.8	\$0.0	\$61.0	\$133.8
<i>New Employee Local Retail Spending Subtotal</i>	\$2.0	\$15.2	\$2.7	\$0.2	\$12.0	\$13.5	\$9.8	\$213.2
Total Annual Sales from New Development in RD17	\$112.0	\$176.9	\$60.6	\$11.4	\$461.9	\$288.4	\$66.5	\$1,177.7
Total Annual Sales Tax Revenue	\$11.7	\$17.3	\$5.7	\$1.1	\$47.7	\$27.2	\$11.7	\$122.3

The assessed value of RD17’s residential development was derived by applying a ‘standard’ value of \$360,000 per low density housing unit and \$100,000 per medium and high density housing unit reported in Table 8. Similarly, the non-residential developable square footage was derived from that identified in Table 8. Based on the EPS Analysis¹⁰ the assessed value of the non-residential property was calculated at follows: Commercial/Office/Industrial \$200/square foot, large warehouse \$40/square foot, medium warehouse \$60/square foot, and transportation at \$175/square foot. The Total Annual Property Tax Revenue was then derived by taking one percent of this Total Assessed Valued.

In total, sales tax collected from the buildout of RD17 is estimated to generate a further \$122.3 million in revenue for state and local government annually. These revenues are the result of additional taxable sales that will occur as currently undeveloped properties in RD17 are built. Three components were estimated to derive the additional sales tax revenue in RD17: 1) Spending from additional households, 2) Spending from additional employees, and 3) Taxable transactions from additional businesses.

Additional spending by new residents was derived by applying standard annual expenditure per household. Following the EPS analysis¹¹ we assume that each low density housing unit makes \$25,000 in taxable retail expenditures per year and that each medium and high density housing unit make \$14,000 in taxable retail expenditures per year. Based on these assumptions, the total additional retail expenditures were estimated by multiplying the number of each new type of household in each area from Table 8 by their associated expenditures. As only a portion of these total annual expenditures would be captured locally, only 60% of the total annual value of retail expenditures was attributed as local generated new retail sales.

All additional employees in RD17 because of its buildout are assumed to make ten dollars of retail expenditures per day for each 240 work days per year¹². The total number of new employees in each

¹⁰ EPS from the Urban Land Institute's Guidebooks

¹¹ EPS from the Urban Land Institute's Guidebooks

¹² EPS from the Urban Land Institute's Guidebooks

area of RD17 is then multiplied by this \$2,400 value to estimate their total annual retail expenditures. The same local capture adjustment as that of local residents, 60%, is then applied to account for expenditures that are not made locally. In addition, the discounted locally captured retail expenditures by new employees is reduced by a further 50% to avoid double counting the new local residents.

In addition, taxable sales from new retail uses and taxable sales by non-retail businesses are important additional local taxable revenue. These sales from business operations are calculated based on assumed rates of taxable sales per square foot¹³. These rates are then used to derive total sales for each regions new business operations across RD17. Seventy-five percent of the new resident and employee subtotals are then subtracted to avoid double counting those components of local expenditures. A further 10% of that adjusted total expenditure is then subtracted from the remainder to account for business shifted from existing city establishments. Business-to-business sales tax revenues are then added to give the total annual sales from the new business operations. The annual sales tax revenue is then calculated based on the sales tax rate for each of RD17's three cities which gives the Total Annual Sales Tax Revenue.

These revenues do not include special assessments on the assessed value of the property, nor other important revenue sources such as property tax in lieu of sales tax, vehicle license fees, and a range of other revenue sources that would be collected if these properties in RD17 were to be developed.

6. Other Regional and Environmental Considerations

When considering SB 5 related levee investments in the RD 17 area, it is also important to consider the future importance of the location in the Northern California Mega-region, as well as environmental and flood risk reduction goals. Some have raised concerns that levee improvements in RD 17 could induce development in a floodplain and thus raise overall flood risk and compromise environmental values. These issues would be a bigger concern if so much of the RD 17 area had not already been developed and its environmental values compromised. Petersen-Brustad Engineers have demonstrated that annual expected flood damages would decline substantially with the proposed levee investments, even if it resulted in new development that doubled the value of property within the reclamation district.¹⁴ In addition, the Army Corps. of Engineers' Environmental Impact Report for the Lower San Joaquin Valley found that there was little environmental value to the RD 17 area were already severely compromised by extensive development. Thus, while development in floodplains is generally discouraged for environmental reasons, RD 17 is in other ways environmentally ideal for development because the land does not have high current or potential environmental values and it is close to existing infrastructure. The potential for the development of large employment centers within RD 17 could improve the regional jobs-housing balance, and potentially reduce the need for the long commutes that are prevalent for area.

¹³ EPS from the Urban Land Institute's Guidebooks

¹⁴ Analysis of Development Risk Resulting from Levee Improvements to ULDC Standards. Peterson – Brustad Inc. April 9, 2015.

Finally, it is important to consider RD 17 in the context of the larger Northern California regional economy. Much has been written and said about the economic divide between coastal California and the Central Valley. Historically, the industrial areas in RD 17 were one of the few examples of successful integration of the Valley and Bay area economies as many parts suppliers to the former Toyota and GM (NUMMI) factory in Fremont were located in this area. When the NUMMI plant closed in 2009, many of these manufacturing facilities such as the 850,000 square foot Pilkington Glass plant, also closed and still remain unoccupied. Many of these facilities are once again attracting interest from Bay Area companies struggling with the high cost and limited availability of space, offering a significant opportunity to boost economically struggling San Joaquin County while also supporting the Bay Area's continued economic strength. One high-profile and very recent example is Tesla's recent acquisition of a former NUMMI facility into a parts manufacturing facility that employs over one hundred people. Thus, there are significant State and regional economic benefits that would result from levee improvements in the RD 17 area.