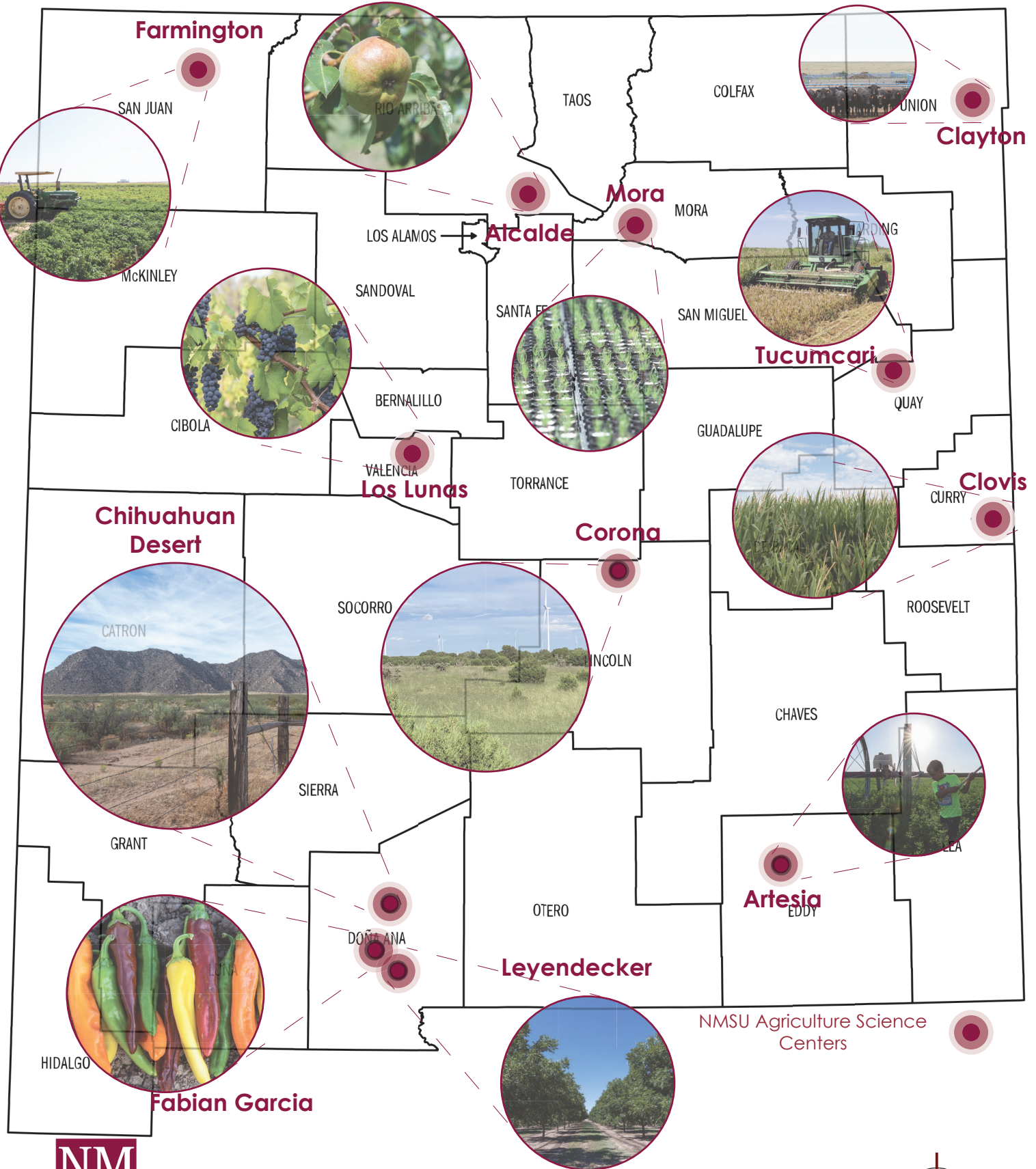


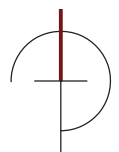
New Mexico State University

College of Agricultural, Consumer, and Environmental Sciences



BE BOLD. Shape the Future.
College of Agricultural,
Consumer and Environmental
Sciences.

NMSU Rex E. Kirksey Agricultural
Science **Center at Tucumcari**



BOOK 12 OF 12

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ACKNOWLEDGMENTS

*Dr. Rolando A. Flores Dean & Chief Administrative Officer College of Agricultural,
Consumer and Environmental Sciences*

*Dr. Leslie Edgar Associate Dean and Director of Agricultural Experiment Station
Brooke Boren AES Director of Land and Assets
Shad Cox AES Livestock Operations Director
Dave Lowry AES Farm Operations Director*

*Heather Watenpaugh University Architect Facilities and Services
Robert Herrera Executive Director Facilities and Services
Jose Loera Assistant Director Facilities and Services
Gary Martinez Project Manager Facilities and Services*

Additional thanks to representatives of the research center:

*Glenn D. Cuff- Clayton Livestock Research Center
Shad Cox- Corona Range and Livestock Research Center
Kevin Lombard, PhD- Farmington Agricultural Center
Mark Marsalis- Los Lunas Agricultural Science Center
Dave Lowry- Fabian Garcia Research Center
Dave Lowry- Leyendecker Plant Science Research Center
Andrew Cox- NMSU College Ranch
Jason Box- R. E. Kirksey Agricultural Science Center at Tucumcari
Dr. Robert Flynn- Artesia Science Center
Dr. Owen Burney- J. T. Harrington Forestry Research Center at Mora
Lara Phihodko- Alcalde Agricultural Science Center*

Planning Consultant

*Staff of NINE DEGREES ARCHITECTURE AND DESIGN, INC.
NMSU-ACES IT DEPARTMENT - Information Technology*

FACILITIES MASTER PLAN REPORT

Executive Summary | July 2023

OVERVIEW

New Mexico State University Facilities Group (NMSU) commissioned Nine Degrees Architecture and Design, Inc. (NDA&D) in the Fall of 2021 to perform a facility assessment study and master plan of the institution's agricultural research centers that are located throughout the State of New Mexico. As identified in this report, this consortium of twelve agricultural research facility locations is an integral part of the College of Agricultural, Consumer, and Environmental Sciences (ACES) academic, research, and public service program for the New Mexico State University System. These assessment efforts required NDA&D to complete this evaluation plan under an open and transparent methodology to ensure a fair data-driven Facility Master Plan (FMP) effort. The Facilities Master Plan is intended to inform NMSU of the College of ACES agricultural research facilities building conditions for operations, use, and future capital investment decisions that may be needed for these agricultural centers' next five years of operations. Together with the College of ACES administration, NMSU Facilities and Services Department Staff, and ACES research centers' staff, our architectural staff members undertook an assessment effort and outreach process that included extensive field visits and data gathering at all twelve research center locations.

The Facilities Master Plan (FMP) findings that informed our team of the specific recommendations are summarized in this document, thus providing NMSU with an outsider's snapshot of the state of operations, facilities conditions, and functional suitability to maintain the center's successful operations. Our team's expectations are that, as this plan is implemented, it will assist the staff at NMSU College of ACES to continue its educational and research vision and mission by having their centers equipped and capable of meeting the needs of their academic endeavors for upcoming research grants and being able to achieve a balance of their existing needs. Through this balance ACES will be able to increase capacity utilization, and by being able to improve their research programs – both being crucial and beneficial issues to all New Mexico State University College of Agricultural Consumer Environmental Sciences students today and in the future.

FINDINGS

After a series of on-site visits and through visual assessment of each facility, the findings included in this Facility Master Plan (FMP) begin to illustrate that many of the College of ACES research center facilities appear to be in relatively poor condition and/or declining conditions. These conditions can be attributed to the historically low level of state funding for critical maintenance and capital investment for basic building maintenance, structural repairs, facility erosion control, mechanical systems repairs, and roof replacement. In addition, based on the data that was discovered during our assessment process, it appears that all research centers, in some form or another, have suffered from issues such as a shortage of maintenance personnel, staff attrition, and financial cutbacks, which have exacerbated their poor facilities' conditions. The annual maintenance and operation budget awarded to each of the agricultural centers has directly impacted the number of repair projects required to improve and maintain each of the centers to perform to their optimal capabilities.

After evaluating demographic information for the State of New Mexico from 1990 to 2020, as reported in the annual assessment by the State of New Mexico Economic Development Department, the state increased its population by an average of 240,000 citizens per decade since the 1990s. It leveled off in 2020 for a total of 2.1 million citizens. Over the past three years since, the population has continued to grow but at a slower and smaller pace. Current assessment predicts a smaller but steady increase in population, with a projected student enrollment for the next 2 to 3 years that will continue to remain relatively level with smaller incremental growth. Additionally, the assessment describes that there will be growth and/or decline in specific geographic areas as the state experiences regional population immigration or interstate migration.

This facilities assessment has identified the need for a minimum expenditure of around \$24,007,105.46 million in projected Operations & Maintenance funding for facility-related needs within the next five years (in 2022 dollars), comprised of \$13,843,194.00 million for the repair of current deficiencies, and additional \$3,761,660.00 million for instructional technology infrastructure improvements. Furthermore, an add is anticipated over the next five years for end of life-cycle repairs

<i>NMSU ACES</i>	
FACILITY DEFICIENCY COST - PRESENT	\$17,604,854.00
5-YEAR LIFE CYCLE FORECAST- ESCALATION	\$6,402,251.14
TOTAL 5-YEAR NEEDED - OVERALL BUDGET	\$24,007,105.46

of \$6,402,251.14 million premium to the O&M Budget. This budget does not include any additional funding that may be required to transition each center to a renewable energy system as currently being studied by NMSU Facilities Team. Each agricultural center's physical condition and functional adequacy were determined by thoroughly inventorying all buildings and accessory structures against their current scheduled use. By comparing the operational capacity of each center against current and projected enrollment predictions based on existing utilization capacity, utilization percentages were developed to inform our assessment team on how to develop individual strategies for facility repair and replacement efforts. These strategies created the best use and value for all college of ACES research facilities. It is certain that continued degradation of the research facilities will financially strain NMSU College of ACES's academic and research mission. The operational expenditures, such as utilities, annual maintenance, and growing extensive repairs caused by buildings and operational systems reaching the end of their life-cycle, will become overwhelming and create greater difficulty to repair the existing buildings.

RECOMMENDATIONS

To determine whether an asset is critical to the continuation of the mission of the University, a needs assessment must be scheduled and performed every five-years and, in some facilities, even sooner, when regulations, curriculum shift, or just a change in the facilities conditions, warrants a new assessment. Our recommendations are based on a mixture of both basic general building systems performance and institutional priorities. Institutional priorities are based on academic necessities as they are balanced against the maintenance and maintenance budgets provided within the annual system's expenditure strategy. Our observations of the buildings' performance were based on assessing the life expectancy of the building systems as they are collectively beginning to reach their end of the life-cycle or by analyzing the systems' age.

Based on the field conditions and facility historical data, Nine Degrees Architecture and Design, Inc., recommends to the NMSU College of Agricultural, Consumer, and Environmental Sciences and NMSU Facilities Planning Team to begin taking additional operational and capital funding steps that will provide opportunities for improving each Ag Center and create the possibility for a more balanced utilization program for each of their research centers.

These additional operational and capital actions are detailed below.

OPTION ONE: Divest Surplus Landholdings.

Divesting surplus landholdings with strategic time-to-market transactions will replenish the NMSU College of Agricultural, Consumer, and Environmental Sciences funding budget and create additional resources for potential reinvestment into their current research center facilities. This recommendation directly aligns with research center staff recommendations towards enhancing the center's mission and vision.



OPTION TWO: Review Land Use for the Surplus Landholdings.

Rethinking and reallocating surplus landholdings with strategic lease transactions to the private sector to create wind farms, grazing farms, solar farms, or any other public-minded use that will allow for a cash flow increase while still retaining land ownership that should replenish NMSU College of Agricultural, Consumer, and Environmental Sciences fund balance and create financial resources for additional reinvestment into each research center facility and infrastructure. This recommendation directly aligns with each research center's mission and vision.



OPTION THREE: Explore Public Bond Support.

The evaluation team advises the institution to consider using non-state funding sources and develop a plan for a multi-million bond referendum to fund facility improvements at each of the twelve research centers. If approved by the voters, these funds would optimize the immediate safety concerns and modernization of the research centers while addressing top-priority facility repair and infrastructure needs in the near term. Consequently this would defer the remaining \$6,402,251.40 million in lower priorities for future implementation due to construction escalation over the next 5-year cycle. In an effort to assist the bond steering committee, the planning team defined a list of recommended high-importance/ high-impact enhancements for each research center focusing on critical facility replacements, repairs, and high technology needs.



OPTION FOUR: Explore Public-Private Partnership.

The evaluation team also recommends that the NMSU College of Agricultural, Consumer, and Environmental Sciences team and the institution consider identifying and developing specific strategic public partnerships aligned with their 5-year cycle to secure targeted sponsorship and ventures with key industry leaders that each center serves. This proposed association can work with donors or sponsors with a vested interest in the success of the research agenda of each center. This option will require a more detailed analysis to engage the private sector in identifying suitable candidates for each research center.



INTRODUCTION AND METHODOLOGY

In concurrence with the academic offering by New Mexico State University, the College of Agricultural, Consumer, and Environmental, the expected outcome for this assessment effort is to provide the New Mexico State University Planning and Design team with a snapshot assessment of the “present day” state of their existing facilities with the expectations of developing a sound strategy for the maintenance, upgrades, and/or replacement of their agricultural centers’ building facilities. This assessment also serves as an inventory of the building conditions of each center intended to inform the College of Agricultural, Consumer, and Environmental Science leadership as they continue to prioritize their needs for academic, research, and public service. In order for the system to help fulfill the NMSU College of ACES educational and research vision, the NMSU Board of Regents and Administration determined the necessity to develop the Facility Master Plan (FMP) and assessment that will inform and guide the potential of needed facility rehabilitation and capital investment decisions for the next 5-year cycle. Entrusted with first putting College of ACES research excellence in the forefront and then emphasizing the effective stewardship of the university’s assets, NDA&D engaged and undertook an exhaustive visual assessment of every research center facility, evaluated demographic studies, and facilitated a transparent assessment and planning process. This process included the participation of staff members from the NMSU team and administrative members of each agricultural center.

The Facility Master Plan findings and recommendations from our assessments and reviews are summarized within this document, providing the NMSU Board of Regents with an independent, unbiased snapshot and near-term forecast of all ACES facilities’ condition, suitability, and utilization. This document summarizes the results of a comprehensive assessment performed in the Fall of 2022 through the Summer of 2023, culminating in this Facility Master Plan with recommendations for NMSU College of ACES that identifies options for future investments in the enhancement and maintenance of its agricultural centers’. We have included a review of the entire facility portfolio, an educational/ research adequacy assessment, a facility condition assessment, a five (5) year life-cycle forecast, and a review of College of ACES’s current enrollment statistics.

NMSU ACES RESEARCH AT EACH SITE

NMSU REX E. KIRKSEY AGRICULTURAL SCIENCE CENTER AT TUCUMCARI

6502 Quay Rd. AM 5 Tucumcari, NM 88401

The research mission of the Rex E. Kirksey Agricultural Science Center at Tucumcari is to conduct innovative, locally driven, globally relevant research designed to discover, develop, and deliver knowledge related to crops (including forages) and livestock production. This research is performed under both irrigated and dry-land conditions to enhance agricultural profitability; stimulate economic development using natural resources; improve the quality, safety, and reliability of food and fiber products; sustain and protect the environment with ecologically sound practices; manage and protect natural resources; and thereby improve the quality of life for the people of New Mexico

Future research efforts – continuation of current research efforts on irrigated and rain-fed crops and cropping systems and livestock feed efficiency improvement and irrigated pastures. We are expanding into soil health, the reuse of treated municipal wastewater for agricultural irrigation, and horticultural crops and trees for human food.

Based on our findings and the facts provided to us, we suspect that they would not increase in land size for research, although, they commented that the NMSU real estate office might be interested in purchasing adjacent lands for solar power generation as a new funding source for the center. In that case, the center will consider expanding into research on agrivoltaics, which is a current hot topic. Otherwise, their strategic plan is to add faculty to evaluate the environmental influences and crop production potential when irrigating with treated municipal wastewater, rangeland restoration and health, and low-input horticultural crops for locally-grown food. In the meantime, they believe that if they could expand our current irrigation capacity by adding infrastructure to irrigate as much as 90 more acres, basically doubling our current sprinkler irrigation capacity they could increase their current research efforts.

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- WAYFINDING**



NMSU Rex E. Kirksey Agricultural Science Center at Tucumcari- WAYFINDING



NMSU Rex E. Kirksey
Agricultural Science
Center at Tucumcari



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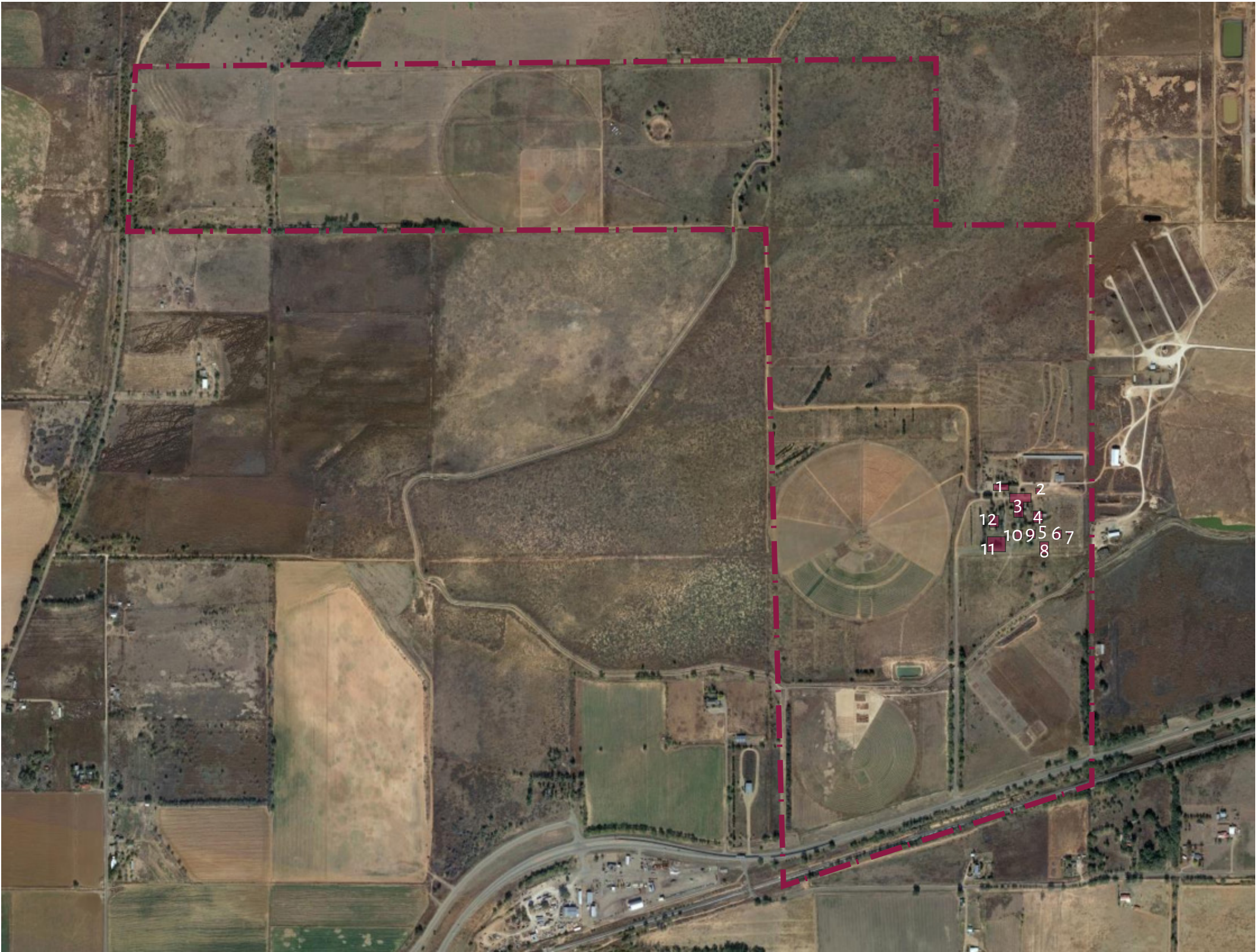
NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- LOCATIONS**



NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- LOCATIONS**



NMSU Rex E. Kirksey
Agricultural Science Center at Tucumcari



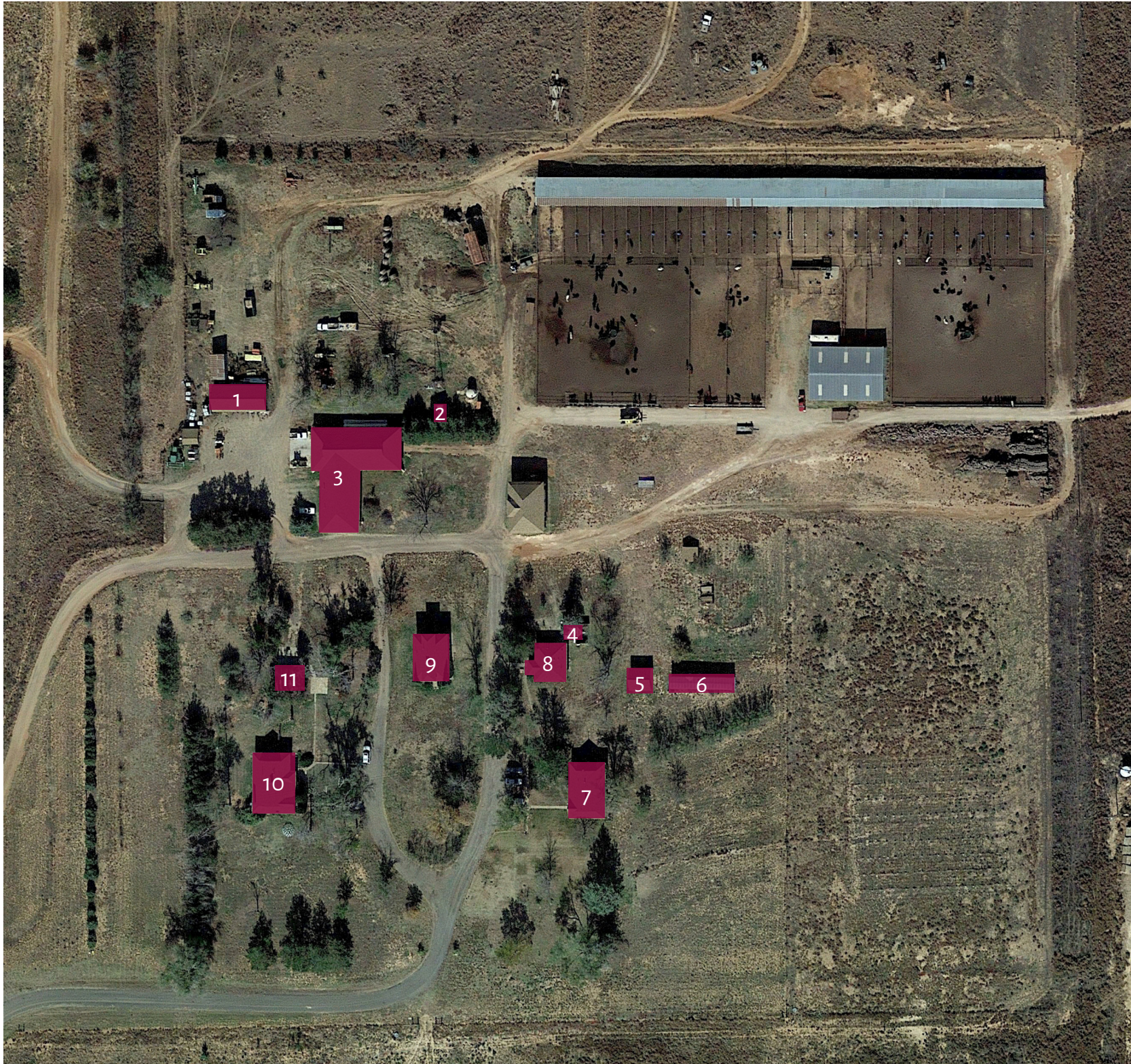
Property Boundary

- 1. Carport 404F
- 2. Pump House 404J
- 3. Shop & Storage 404E
- 4. Storage Barn 404I
- 5. Oven Drying Building 404K
- 6. Garage A 404H
- 7. Garage Student Trailer 404L
- 8. Offices 404D
- 9. Laboratory 404C
- 10. Conference Building 404B
- 11. Superintendent's House 404A
- 12. Garage B 404G



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NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- LOCATIONS**



NMSU Rex E. Kirksey
**Agricultural Science
Center at Tucumcari**

- 1. Carport 404F (FCI Score 1.467)
- 2. Pump House 404J (FCI Score 0.033)
- 3. Shop & Storage 404E (FCI Score 1.015)
- 4. Oven Drying Building 404K (FCI Score 0.834)
- 5. Garage A 404H (FCI Score 1.726)
- 6. Garage Student Trailer 404L (FCI Score 0.648)
- 7. Offices 404D (FCI Score 0.246)
- 8. Laboratory 404C (FCI Score 0.426)
- 9. Conference Building 404B (FCI Score 0.359)
- 10. Superintendent's House 404A (FCI Score 0.287)
- 11. Garage B 404G (FCI Score 0.834)



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NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari - DEFICIENCIES LIST**



NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari** - Deficiencies **LIST**



STORAGE BARN 404I

This building has eroded foundations and load bearing walls, shows differential settlement, has negative water drainage toward it from road, the floor is heaving and needs new roof. This building it's a candidate for removal and replacement.



SHOP AND STORAGE 404E

This building has eroded foundations and load bearing walls, shows differential settlement, has negative water drainage toward it from road, the floor is heaving and needs new roof. This building it's a candidate for removal and replacement.

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari** - Deficiencies **LIST**



GARAGE A 404 H

The stucco is cracked and need repair, it has differential settlement, the building East wall is leaning and has rotted wood in all interior walls. This building is candidate for removal and replacement.



LAB 404C

The building needs an ADA accessible route and parking spaces to the building entrance and North door. Existing stucco has cracks that need to be repaired and repainted, it needs a new roof including gutters and downleaders. The roof outriggers need repairs and or replacement, and adding or repaint entire soffit areas. Need a ADA restroom, the concrete floor has big gaps and cracks that needs to be repaired and coated with epoxy, and the building needs ADA lockset throughout. All wood at entry porch needs to be primed and repainted. Remove vegetation from next to building, concrete apron all around with regrade for positive drainage away from building,

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari** - Deficiencies **LIST**



OFFICES 404D

Needs ADA access and parking space with accessible route to entrance. Need ADA restroom, it also needs ADA door levers throughout, the need ADA restroom is not compliant. The entry porch soffit where repairs needed including repairing the major crack at entry porch. The East door needs to be recondition, while the stucco walls have cracks that need to be repaired and repainted. Need to add a new roof with gutters and downleaders, and the roof outriggers need replacement, repairs, and repaint entire soffit area. The rotted fascia board over entry area needs to be replaced, need to add fascia board, and repaint window wood trims. The building needs LED lighting throughout, repair interior plaster cracks and repaint, and the basement concrete perimeter stem wall needs extensive crack repairs. The installation of an exterior drainage tile system to stop moisture from reaching it. The basement concrete floor is severely cracked and needs to be replaced. Repaint all wood trim along exterior and interior, repaint all wood at entry porch, refinish attic vent wood, reconstruct all brick chimneys and re-plaster. A new approach sidewalk from parking area is required. Need to add a concrete apron all around with regrade for positive drainage away from building, remove vegetation from next to building,



CONFERENCE BUILDING 404B

Needs ADA access and parking space with accessible route to entrance. Need ADA restroom, it also needs ADA door levers throughout, the need ADA restroom is not compliant. The building stucco cracks needs to be repaired and repainted. Need to add a new roof with gutters and downleaders, and the roof outriggers need replacement, repairs, and repaint entire soffit area. Need to repaint window wood trims, refinish East man door and jambs. The building needs LED lighting throughout, repair interior plaster cracks and repaint, and the basement concrete perimeter stem wall needs extensive crack repairs. The installation of an exterior drainage tile system to stop moisture from reaching it. The basement concrete floor is severely cracked and needs to be replaced. Repaint all wood trim along exterior and interior, reseal wood floor in kitchen and attic. Add a concrete apron all around with regrade for positive drainage away from building.

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari** - Deficiencies **LIST**



CARPORT 404F

The East side of the building has extensive rot to be repaired, the foundations are eroded, and has differential settlement, the East wall has rotted wood and is leaning, and in the North elevation shakes are rotted, This building is candidate for removal and replacement.



GARAGE B 404G

This building needs a new front door and overhead garage door including new jambs. The wood cornice trim needs to be repaired and painted. It needs a new roof including gutters and downleaders. It needs a concrete apron all around with additional site grading. Repair stucco cracks and repaint, need to install new window trim and paint, and replace the garage concrete floor and driveway apron since it is severely cracked and needs replacement.

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari** - Deficiencies **LIST**



GRADUATE STUDENT TRAILER 404L

Need ADA ramp and deck with parking space, roof leak repairs, gutters and downleaders, need ADA restroom, need skirting repairs, concrete apron and positive drainage regrade away from foundation.



SUPERINTENDENT HOUSE 404A

Needs ADA access and parking space with accessible route to entrance. Exterior walls has cracked stucco coat in needs of repairs and repaint. The window accents and trim need repainting, the roof framing outriggers need replacing, repaint, and repair along with the soffits, the North and South dormer-wood vent need repainting. Replace broken concrete apron, the basement concrete perimeter stem wall needs extensive crack repairs and an exterior drainage tile system to stop moisture from reaching it. The basement concrete floor needs extensive patching and coating at sewer line repair work. Inside the building, ceiling repairs are required throughout and repaint, as well as wall cracks that require patch, repair and paint.

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari** - Deficiencies **LIST**



OVEN DRYING BUILDING 404K

Need new hollow metal doors and new concrete entry stoop including regrading the site to drain away from the building with ADA ramp and ADA hardware.



PUMP HOUSE 404J

Needs gutter and downleader, regrade Southwest corner, it needs integrally wired heater, and a new concrete entry stoop including regrading the site to drain away from the building with ADA ramp and ADA hardware.

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- FLOOR PLANS**





NMSU Rex E. Kirksey
**Agricultural Science
Center at Tucumcari**

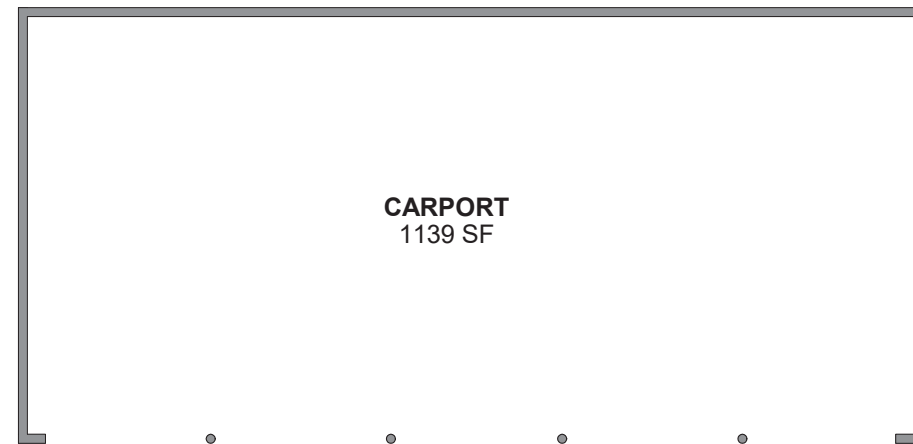
- 1- Carport 404F
- 2- Pump House 404J
- 6- Grad Student Trailer 404L



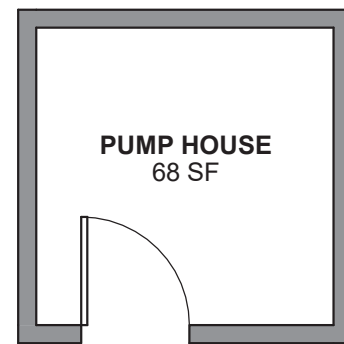
Key Map



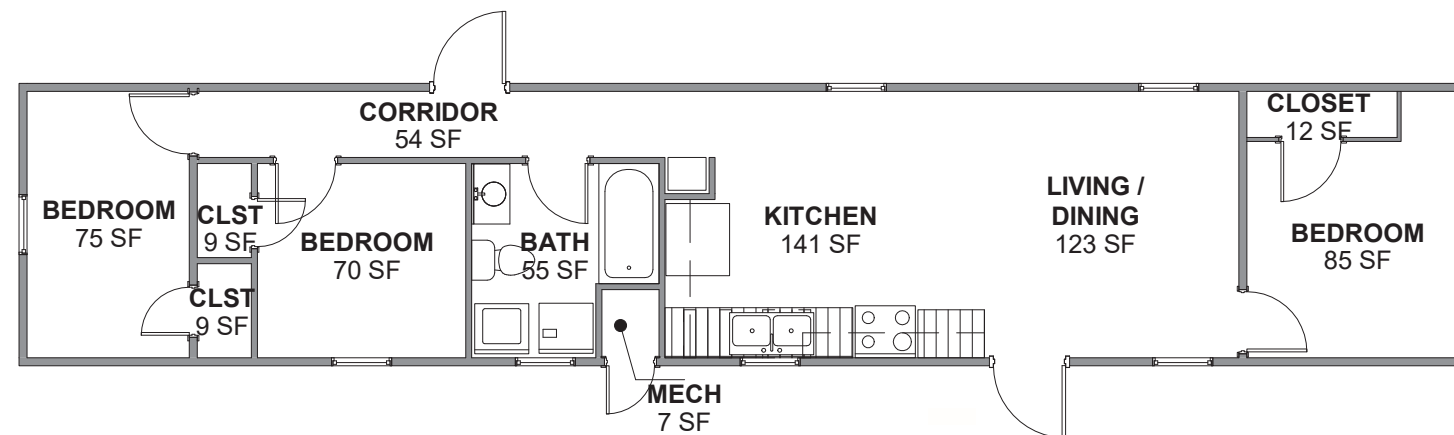
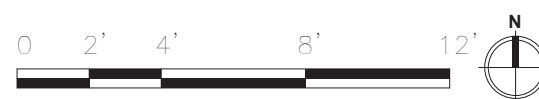
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404F CARPORT
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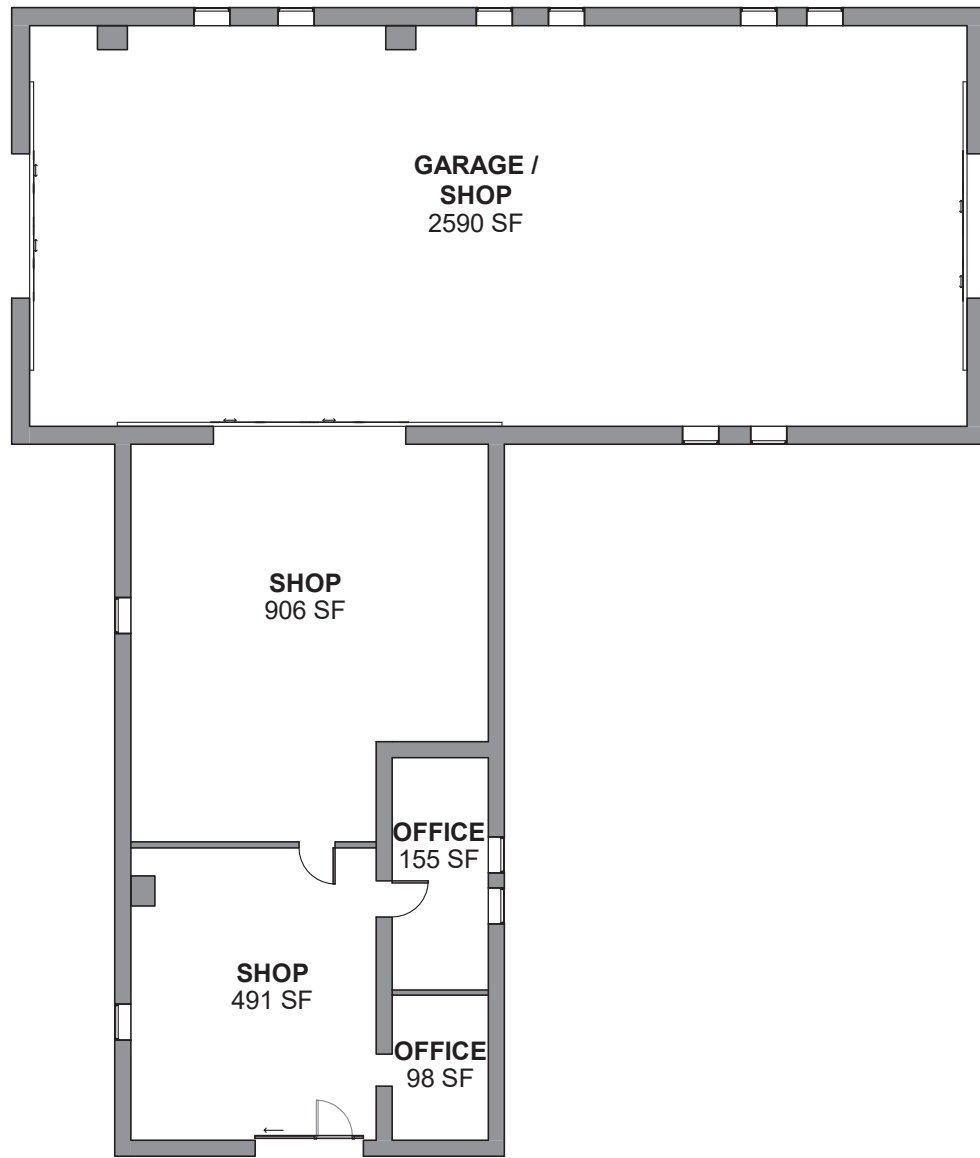


404J PUMP HOUSE
SCALE 3/16" = 1'-0"



404L GRAD STUDENT TRAILER
SCALE 1/8" = 1'-0"





404E SHOP AND STORAGE
 SCALE 1/16" = 1'-0"

0 8' 16' 32'



NMSU Rex E. Kirksey
**Agricultural Science
 Center at Tucumcari**

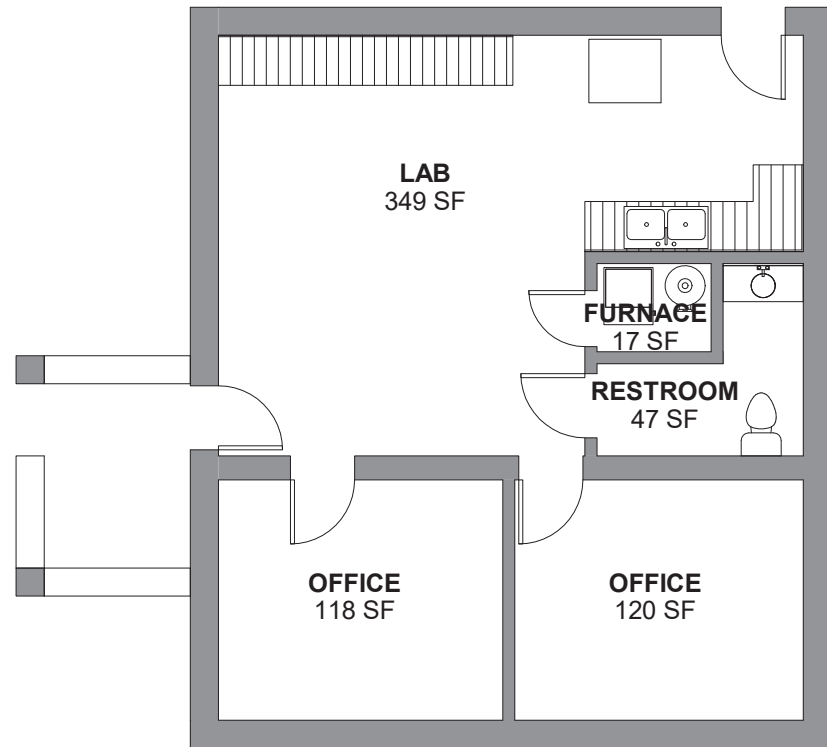
3- Shop and Storage 404E



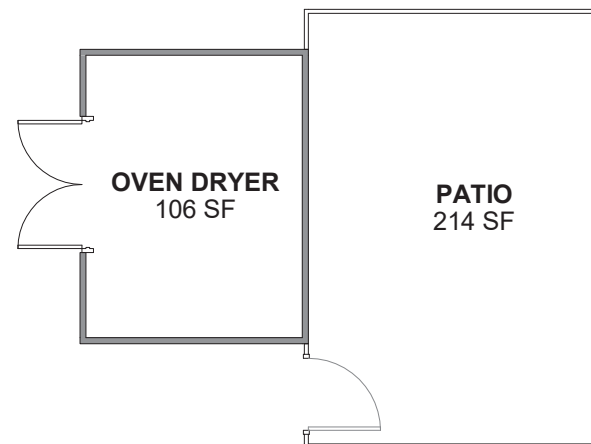
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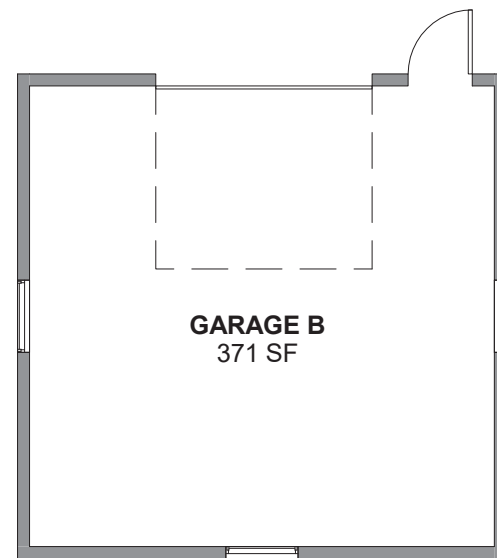
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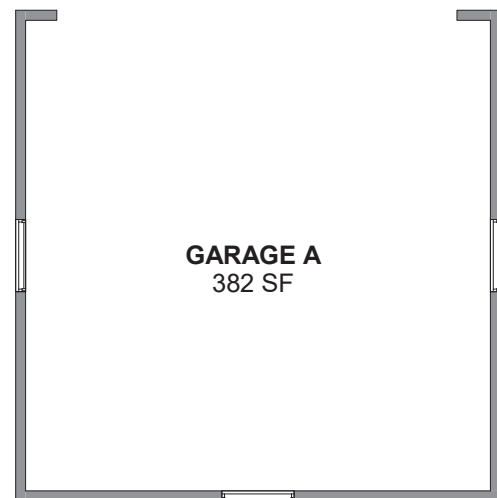
404C LABORATORY
SCALE 1/8" = 1'-0"



404K OVEN DRYER BUILDING
SCALE 1/8" = 1'-0"



404G GARAGE B
SCALE 1/8" = 1'-0"

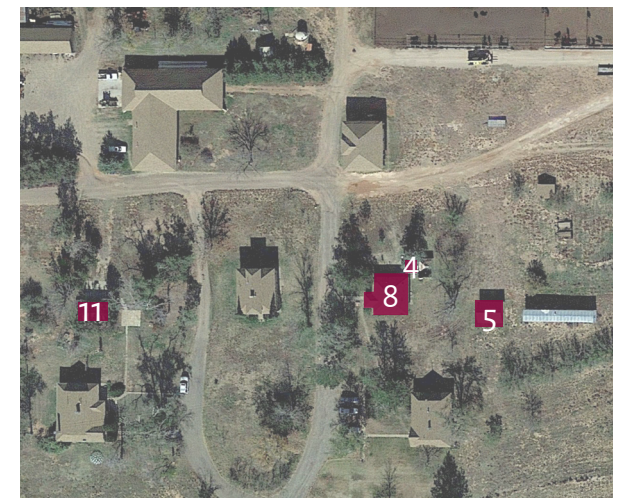


404H GARAGE A
SCALE 1/8" = 1'-0"



NMSU Rex E. Kirksey Agricultural Science Center at Tucumcari

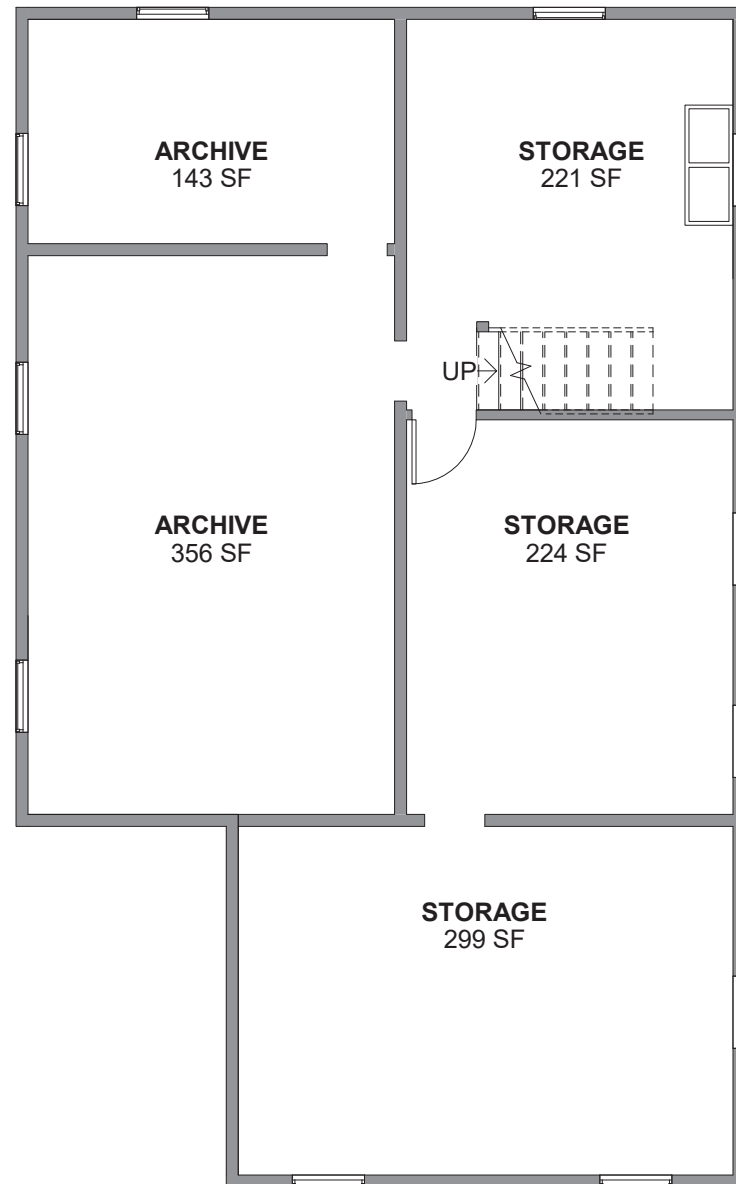
- 4- Oven Dryer Building 404K
- 5- Garage A 404A
- 8- Laboratory 404C
- 11- Garage B 404G



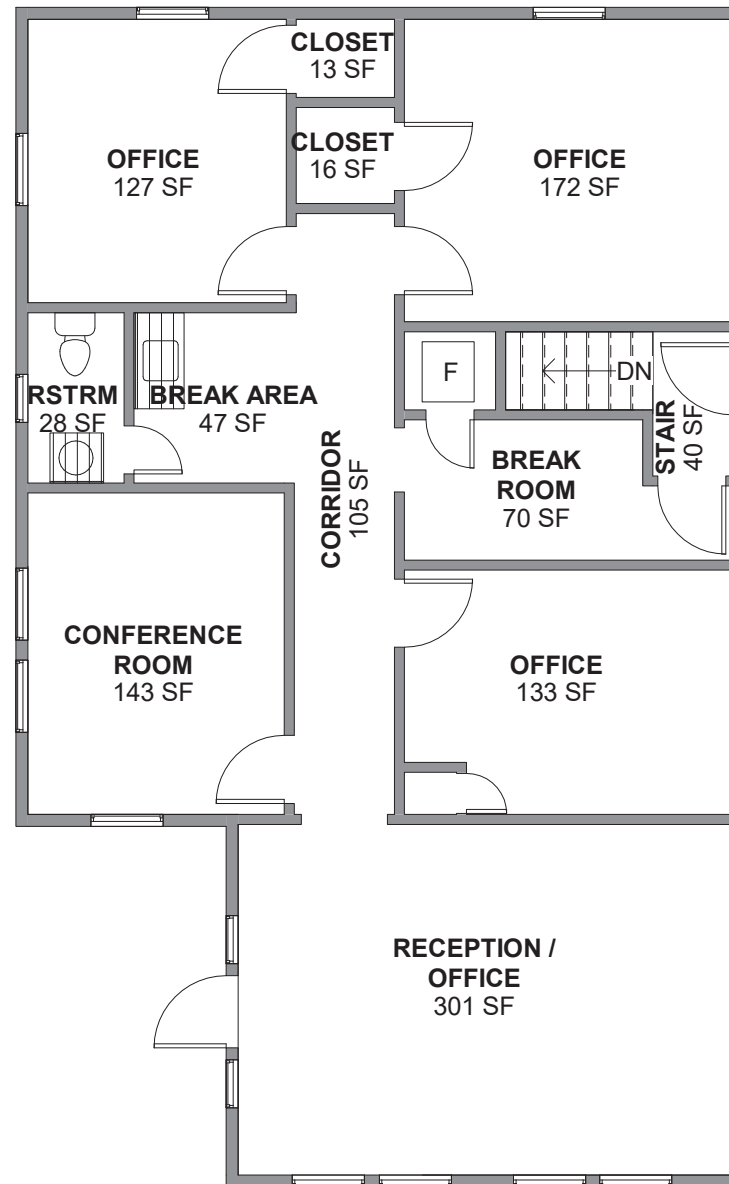
Key Map



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BASEMENT



GROUND LEVEL

404D OFFICES SCALE 1/8" = 1'-0"



NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari**

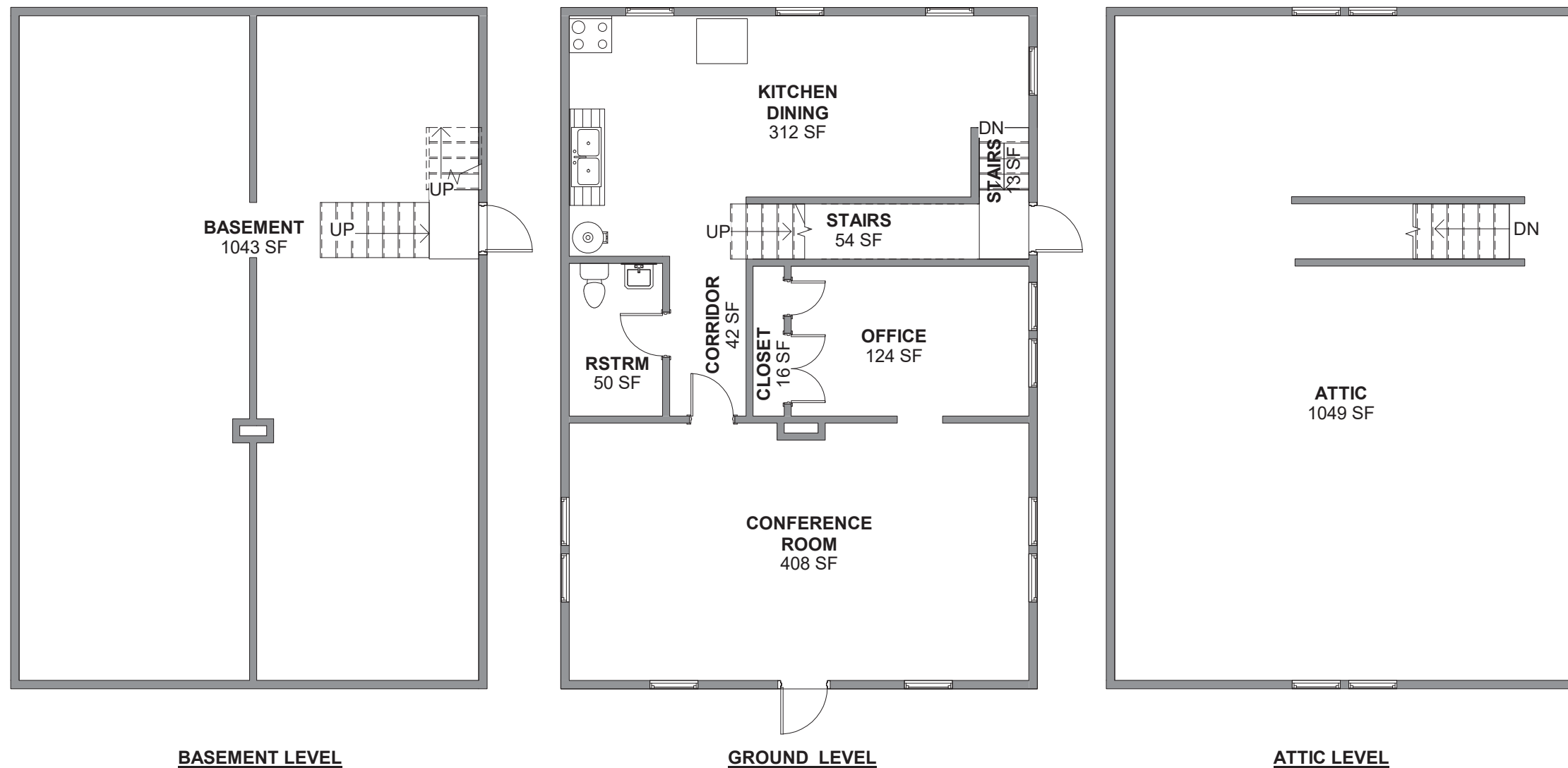
7- Offices 404D



Key Map



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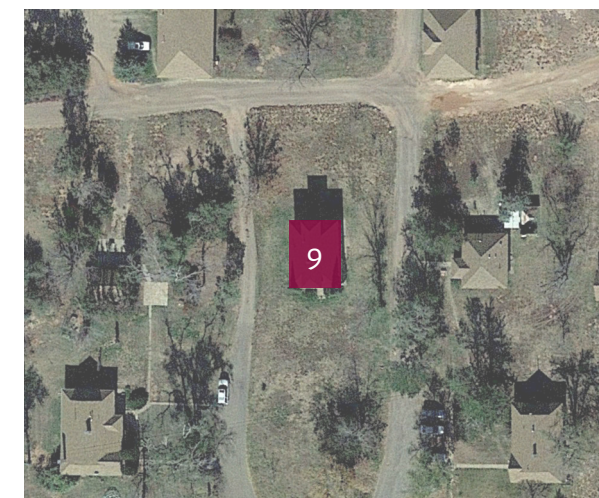


404B CONFERENCE BUILDING SCALE 1/8" = 1'-0"



NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari**

9- Conference Building 404B



Key Map



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**Agricultural Science
Center at Tucumcari**

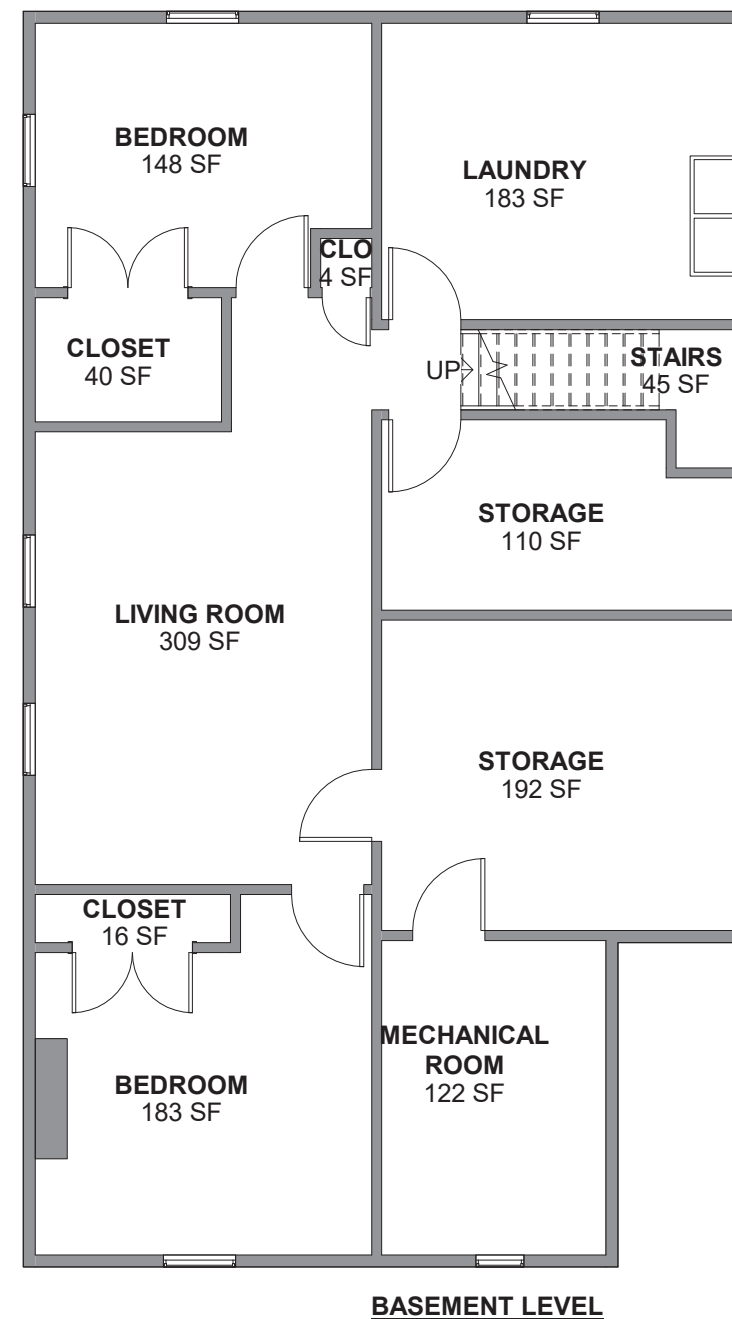
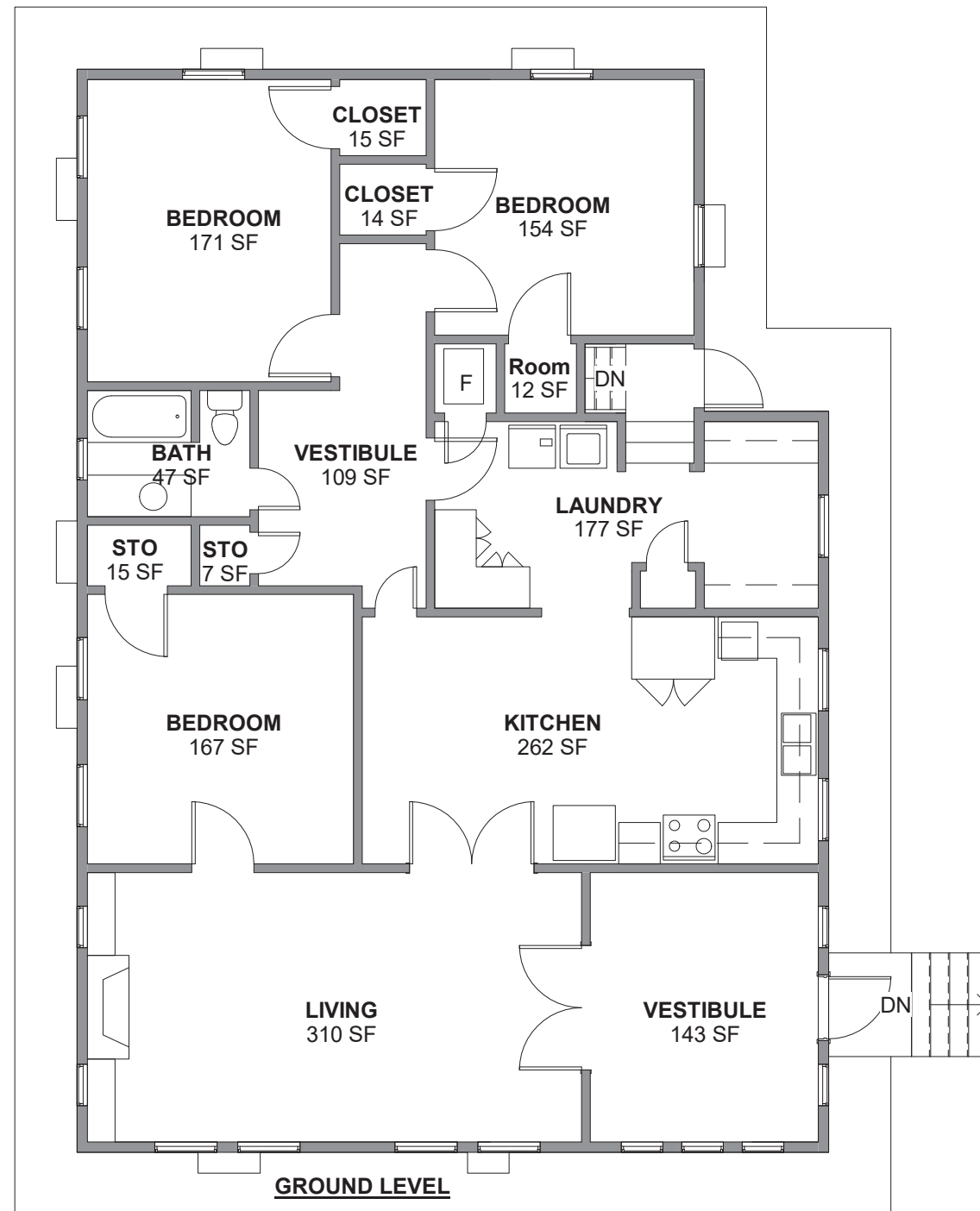
10- Superintendent's House 404A



Key Map



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404A SUPERINTENDENT'S HOUSE
SCALE 1/8" = 1'-0"



TRUE
NORTH

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- CANDIDATES FOR DEMOLITION**



April 8, 2022

Gary Martinez, Project Manager
NMSU Facilities & Services -- PD&E
Box 30001, MSC 3545
Las Cruces, NM 88003-8001



**RE: NMSU Tucumcari Agricultural Research Center
Evaluation of Horse Barn Building**

Dear Gary:

Our firm visited the referenced site to conduct a visual investigation and assessment of the condition of the referenced facility (see attached site plan image).

The subject building is a rectangular, two-story load-bearing adobe wall structure which is currently used for storage of hand tools and other small size materials. The building has been temporarily reinforced with tension cables along all four perimeter walls to stop the adobe walls from buckling further and collapsing. The adobe walls have eroded beneath the exterior stucco layer in various locations due to years of water intrusion, thereby weakening the walls' load bearing capacity. The stucco system has come loose from its connection to the adobe bricks in most areas and is mostly loose and unstable. Thru-wall cracks indicating differential settlement are evident along the perimeter walls. The perimeter walls are leaning in different directions as a result of differential settlement and damage to the adobe bricks.

Based on our observations, it is our opinion that this building is beyond restoration as it would not be cost-effective to attempt to rehabilitate/ restore it with its buckling adobe perimeter walls. This building has extensive differential settlement and vast structural problems. It is our belief this building presents a safety hazard for users and should be considered a candidate for demolition.

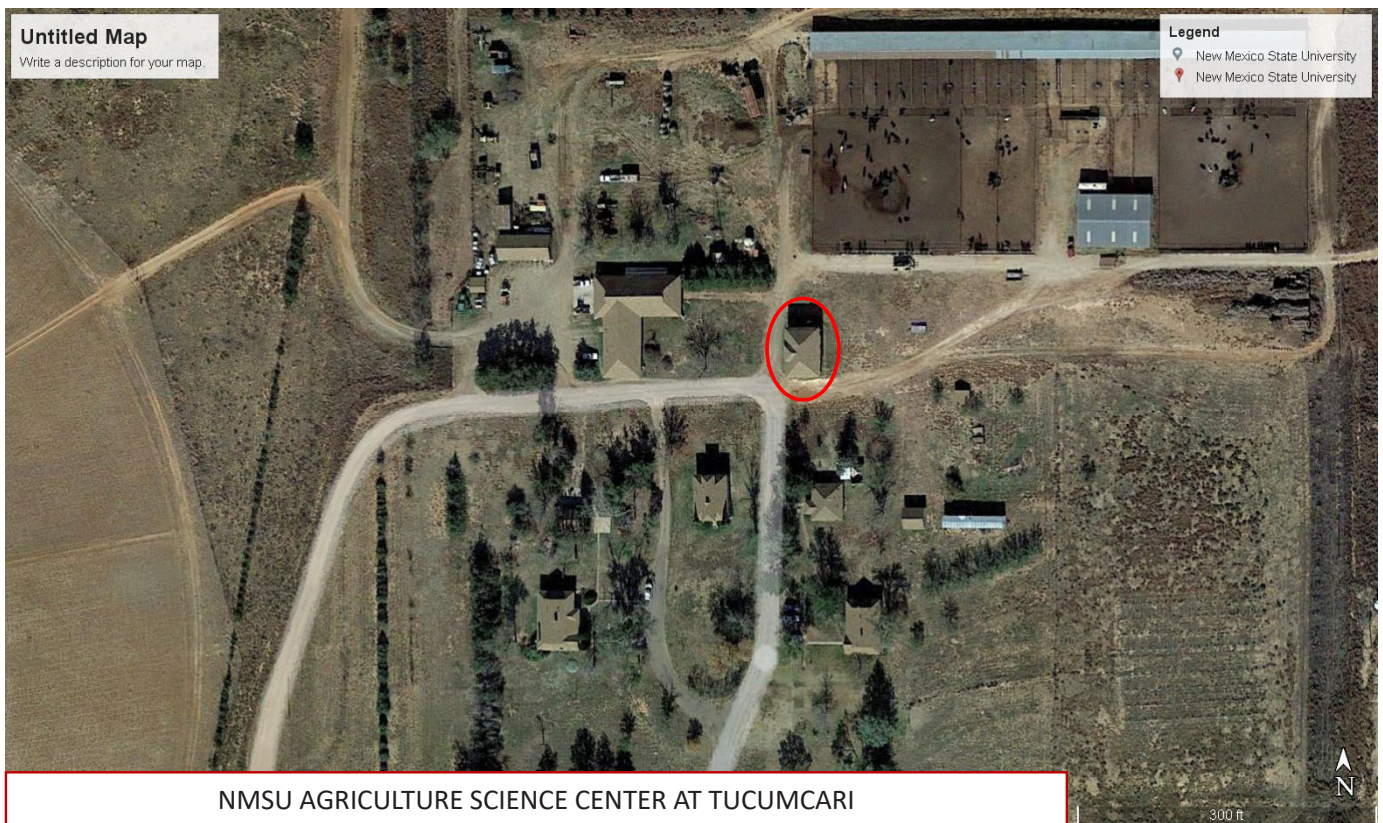
Please do not hesitate to call if we can be of further assistance on this or any other matter.

Sincerely,

**Cesar Molina, AIA, LEED AP
President
Nine Degrees Architecture + Design Inc.**

Member of the American Institute of Architects
cesarm@nine-degrees.com

P.O. Box 4135
Sunland Park, New Mexico 88063
915-526-8739 f 915-533-3282





View of main façade showing structural cracks throughout the adobe walls due to differential settlement. This condition is typical.



View of Southeast corner showing wall leaning out with differential settlement. This condition is typical.



Close-up view of structural cracking and differential settlement. This condition is typical.



View of corner settlement and through-wall cracking. This condition is typical.

TUCUMCARI

The following buildings are candidates for replacement:



Horse barn has differential settlement. Building is beyond feasible repair.



Shop building has differential settlement. Building is beyond feasible repair.

NMSU AG CENTERS FACILITIES MASTER PLAN CANDIDATES FOR DEMOLITION AND REPLACEMENT



- The fuel storage is a combustible building with rotted wood and has erosion undermining foundation. Building beyond feasible repair



- The multi-vehicle storage carport has rotted shakes and cornices all throughout. Also, it has erosion undermining foundation. Building beyond feasible repair

NMSU AG CENTERS FACILITIES MASTER PLAN CANDIDATES FOR DEMOLITION AND REPLACEMENT



- The fuel storage is a combustible building with rotted wood and has erosion undermining foundation. Building beyond feasible repair



- The multi-vehicle storage carport has rotted shakes and cornices all throughout. Also, it has erosion undermining foundation. Building beyond feasible repair

NMSU AG CENTERS FACILITIES MASTER PLAN CANDIDATES FOR DEMOLITION AND REPLACEMENT



- The old car port has rotted wood throughout. Also, it has erosion undermining foundation and is already leaning. Building beyond feasible repair



- The single bay implement storage has rotted wood columns sitting on earth. It has erosion undermining foundation. Building beyond feasible repair



The single bay implement storage has rotted wood columns sitting on earth. It has erosion undermining foundation. Building beyond feasible repair



The tire storage is a combustible building with rotted wood throughout. Building beyond feasible repair

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- INVENTORY COMPARISON**



NO CANDIDATES FOR INVENTORY COMPARISON

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- UTILITY OVERVIEW**



Tucumcari AES - Rex E. Kirksey Agricultural Science Center

Address: 6502 Quay Rd. AM 5, Tucumcari, New Mexico, 88401

Contact: Jason Box, Farm Ranch Manager – (575) 461-1620
jbox@nmsu.edu



Description:

As described by the NMSU System, the New Mexico State University's Rex E. Kirksey Agricultural Science Center at Tucumcari exists to discover, develop, and deliver information about globally applicable innovative solutions for crop and livestock systems in irrigated and dryland agriculture with specific applications locally and throughout New Mexico to meet NMSU's College of Agricultural, Consumer and Environmental Sciences Pillars for Economic and Community Development. The Rex E. Kirksey Agricultural Science Center at Tucumcari is located on land purchased by local farmers and ranchers and given to New Mexico State University (New Mexico A&M University, at that time) to conduct local research. The current location replaced one purchased by the same group a few years earlier that was unsuitable for research. Historically, the center's mission included performance bull testing, developing forage and grazing systems for irrigated lands in the western USA, and evaluating crops and cropping systems for local adaptation, including cultivar performance evaluations. Prior to conducting research in irrigated agriculture in the early 1950s, the center evaluated dryland cropping systems and trees for windbreak and farmstead plantings, the latter of which led to the establishment of over 50 species of trees and shrubs on the center grounds, making it an oasis of trees in a sea of native grassland. In 2012, the center entered into an agreement with the city to reuse treated municipal wastewater for irrigation. An integral part of the center's activities since 1961, the New Mexico Beef Cattle Performance Association (NMBCPA) has conducted the Tucumcari Bull Test at the center. This program encourages beef herd improvement by the use of performance-tested bulls evaluating bulls for gain ability and other measures of production efficiency, concluding with a Performance Tested Bull Sale in March.

In 2015, members of the NMBCPA formed the Tucumcari Feed Efficiency Test, LLC, and they invested funds to install GrowSafe technology, a state-of-the-art system to evaluate individual animal feed efficiency and expanded the program from the single winter test to nearly year-round testing of bulls and heifers for genetic improvement in feed-gain efficiency. In 2018, an individual water consumption system developed by NMSU was installed, making the feed efficiency testing facility the only outdoor bull testing facility with both capabilities.

Findings

Water System:

Based on the information provided, this facility has multiple wells that supply water for various functions in their daily use. They originally had three wells; one well was used strictly for the campus headquarters and associated buildings, and two additional wells for the livestock and irrigation needs of the campus. According to the information we received from the center, the NM Office of the State Engineer does not regulate their three existing wells. Recently, the facility abandoned the use of the well that provided water to the headquarters and associated buildings and connected them to the City Water lines and services.

In addition, this facility has no plans for any additional wells. In the event that one of their livestock or irrigation wells begins to fail, then the center will reconsider its present decision of no new wells.

Electrical System:

Based on the information provided, this facility has two electrical connections that supply [power to the facility. The headquarter Building and associated Building receive their power from Xcel Energy. The second power supplier is being provided to the rear portion of the facility and serves the well, sprinkler, and electrical fence on their property. This service is being provided by the Farmers’ Electrical Cooperative, Inc.

Waste Water System:

Based on the information provided, this facility’s sewer needs have been handled by an existing septic system that has the capacity to service the headquarters and all existing associated buildings. The system is being monitored every year to ensure that their capacity is not impaired and that they stay within the nitrate production as required by the state.

The current septic tank was reworked in 2013, and they don’t expect any additional repairs in the near future.

Tucumcari AES - Rex E. Kirksey Agricultural Science Center

All domestic water needs are supplied by the City Water Infrastructure		
Well Number 1	Not Applicable	Use for domestic use at the headquarters building
Well Number 2	Not Applicable	Use for irrigation purposes - abandoned
Well Number 3	Not Applicable	Use for irrigation purposes - abandoned

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- INFORMATION TECHNOLOGY**

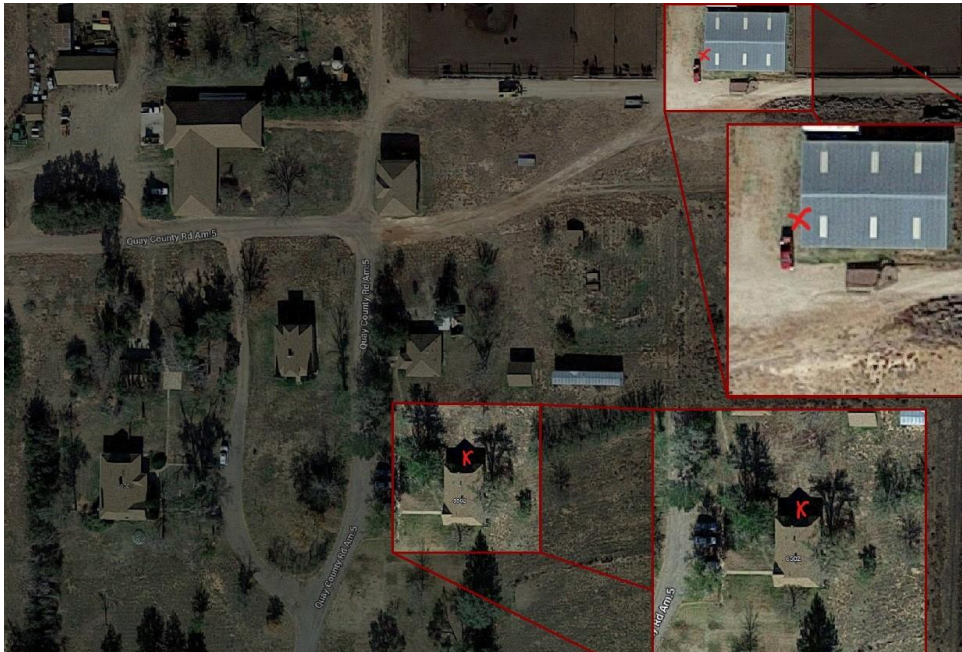


NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari**- Information **Technology**

Network and Wireless LAN

Wireless Network Coverage	Main Building
Condition of Physical Cabling	Rewire
Distribution Closet	Basement
Central Tower	No
Monthly Estimates	
Registered Devices	37
Upload	314.71 GB
Download	246.42 GB

DMARC and network equipment reside in the basement used for storage. The Main Office needs to be re-wired and more wireless access points could be use in Auxiliary buildings.



IT Spaces/Network Closets

Recommended:

Network space is needed at this ASC and needs to meet standards. It is our recommendation to build out an IT/network space for this ASC. If there is no room that can be modified into this space, it is our recommendation to build a separate IT/network space outside, close to the existing DMARC, that is cooled, isolated only for IT needs, has proper lighting, floor loading, power, network racks and equipment, airflow, and meets standards.

UPS

Recommended:

Multiple, 2 minimum, network UPS's are needed for the network equipment at the Tucumcari ASC.

Network Tower

Recommended:

70 – 80 ft network tower erected to provide broadband INTERNET to different parts of the center. This network tower would also need to be installed with power to provide power to the network devices on the tower.

NMSU Rex E. Kirksey **Agricultural Science Center at**

Tucumcari- Information **Technology**

The location of the tower can be close to the main building on the site where the DMARC is to allow the easier network access to be broadcast. If that is not possible, another location can be determined by the availability of line of site from the main building to the tower.

POP/PtMP

Recommended:

Tucumcari ASC needs one PtMP, point to multi point, and at the minimum five POPs, point of presence, to help saturate different parts of the center with wireless. The POPs are mobile and can be moved and adjusted as needed.

Cable Plan

Recommended:

Existing cabling, jacks, ports, patch cables and patch panels be upgraded to Category 6, at minimum. Connectivity between buildings can be accomplished by trenching and laying conduit, or to create wireless bridges through line of sight wireless broadband devices.

VoIP

Recommended:

It is recommended replacing antiquated phone systems and currently, the standard is VoIP. VoIP phones will tie into the network infrastructure and allow us to control the phones off of one system, and gives us the availability to manage the phone systems from each ASC remotely.

Conference Room/Collaboration Spaces

Recommended:

Smart screens, interactive touch displays, conference room cameras, speakers and mics, etc. can all be implemented to help bring these conference room spaces into the modern era and allow them to be utilized on a moments notice.

This conference room should include one smart interactive display, either Dell or Samsung, laptop or mini computer to be mounted on the display, a wall mount or portable mount, at least one Stem wall speaker/mic and Stem Hub, one Huddly camera, a Logitech Swytch for BYOD (bring your own device), a PoE Ethernet switch, and an AV station/equipment rack.

Security & Surveillance Systems

Recommended:

This ASC should have a minimum of two cameras, one showing the entrance/exit when vehicles arrive, and one on the main office building. This ASC would benefit from multiple cameras across the center to deter theft and increase visibility. Different locations at the center would allow for cameras to be installed and configured.

NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari**- Information **Technology**

ACES IT :: TUCUMCARI ASC - PTMP/POP SETUP - AERIAL VIEW



UBIQUITI ROCKET 5AC P-TMP (2)
INSTALLATION HEIGHT: 8 M (26 FT)
OUTPUT POWER: 28 dBm
CHANNEL WIDTH: 40 MHz
ANTENNA GAIN: 22 dBi

UBIQUITI ROCKET 5AC



SPECS:
 - 5GHz WIDE BAND OPERATING FREQUENCY
 - POINT-TO-MULTIPOINT LINKS (PTMP)
 - DEDICATED MANAGEMENT RADIO



UBIQUITI ISOSTATION 5AC
INSTALLATION HEIGHT: 3 M (10 FT)
OUTPUT POWER: 25 dBm
CHANNEL WIDTH: 40 MHz
ANTENNA GAIN: 15.5 dBi

UBIQUITI ISOSTATION 5AC



SPECS:
 - 45° ISOLATION ANTENNA
 - SUPERIOR THROUGHPUT UP TO 450 MBPS
 - HIGH CAPACITY AND SCALABILITY
 - CAPABLE OF HIGH-SPEEDS

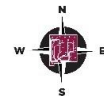


UBIQUITI MESH PRO
INSTALLATION HEIGHT: 2 M (6 FT)
MAXIMUM POWER: 20 dBm
POWER SUPPLY: 24 V, 0.5A
ANTENNAS: 2.4 GHz, 5 GHz

UBIQUITI MESH PRO ACCESS POINT



SPECS:
 - OMNIDIRECTIONAL 360° COVERAGE
 - LONG RANGE SYMMETRICAL TRANSMISSION UP TO 183 METERS
 - 802.11AC WAVE 1 WIFI
 - 2.4 GHz (802.11N) BAND WITH A 450 MBPS THROUGHPUT RATE
 - 5 GHz (3X3 MIMO) BAND WITH A 1.3 GBPS THROUGHPUT RATE



NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- ENERGY REPORT**



NMSU Rex E. Kirksey **Agricultural Science Center at Tucumcari- ENERGY REPORT**

Energy Audit:

For detail information regarding conservation strategies for the R. E. Kirksey Tucumcari Agricultural Center please refer and review the AAE Energy Master Plan study.