Babacomari Solar South LLC
Utility-Scale Solar Generation Project
Application for a Special Use Permit

Layne Ashton

Babacomari Solar South LLC

10/6/2020

Application for a Special Use Permit

Babacomari Solar South LLC

Utility-scale Solar Generation Project

October 6, 2020

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Cochise County
Community Development
Planning, Zoning and Building Safety Division

Public Programs...Personal Service
www.cochise.az.gov

Special Use Project Application

Applicant's Certification & Acknowledgement

By signing below, I certify that:

1. I am the Owner or authorized Agent of the Owner of the property being developed.
2. I am applying for the meetings/ review(s) indicated below.
3. I have read and understand the information provided in this Application Guide.
4. This application is complete and accurate to the best of my knowledge. Submission of false information may constitute fraud, and may be punishable by fine, imprisonment, or both pursuant to A.R.S. §13-2310.
5. I hereby request all inspections necessary to process this application, and if the permit is issued I request all inspections necessary to monitor progress, and document completion, at all stages of the work related to this permit.

By signing below, I acknowledge that:

6. Incomplete or inaccurate submittals by the Owner, Applicant or any other representative may result in delays, return of submittals, or denial of this application.
7. The submittal is subject to an administrative review of 10-business days (5-business days initial review, 5-business days resubmittal review) at which time I will receive written or electronic notice if the application is complete or, in the case of an incomplete application, a list of deficiencies that need to be corrected. An application will not pass the review for administrative completeness until all deficiencies have been corrected.
8. If the County does not issue a written or electronic notice of administrative completeness within the 10-business days, the application will be deemed administratively complete and the substantive review process begins.
9. The overall review time is 130-business days.
10. The substantive review process is 120-business days.

Planning, Zoning and Building Safety
1415 Melody Lane, Building F
Bisbee, Arizona 85603
520-432-9300
520-432-9278 fax
1-877-777-7958
planningandzoning@cochise.az.gov

By signing below, I acknowledge that:

11. A complete response to any correspondence will be submitted to Cochise County for any subsequent reviews.

12. The Applicant or Agent will be sent written or electronic notice of a license approval or denial within the substantive review period.

13. All required permits must be obtained prior to any construction and that failure to obtain permits may result in fines or other penalties.

14. The Applicant or Agent is responsible for all changes and additional time required to correct plans and/or development as a result of differences between the proposed use and what is permitted in the zoning district in which the property lies.

15. The project review process and timeframe is suspended when a project triggers the requirement for an application for approval by an Outside Agency, the Planning and Zoning Commission, and/or the Board of Supervisors. If either the Planning and Zoning Commission or the Board of Supervisors approves the request contained in the application, then Community Development Department will resume the project review process. If the Board of Supervisors denies the request, then the Community Development Department will consider the project to be denied.

By signing below, I acknowledge that:

16. An appeal protesting any denial of an application may be made to Cochise County Development Services Director, 1415 Melody Lane, Bldg. F. Bisbee, Arizona 85603 The appeal shall set forth all relevant facts pertaining to the denial, and must be in writing. It must be filed within ten-days from the date of the denial letter.

17. If the County does not issue to the Applicant the written or electronic notice granting or denying a license within the **overall** time frame or within the mutually agreed upon time frame extension, the county SHALL refund the Applicant all fees charged for reviewing the applications and SHALL excuse any fees not yet paid. The refund SHALL be made within 30-working days after the expiration of the agreed upon time frame pursuant A.R.S. § 11-1605(J).

October 6, 2020

Signature Date

Babacomari Solar South LLC, by CRE-Babacomari South Arizona LLC, its Member, by Parasol Renewable Energy Holdings LLC, its Member, by Parasol Renewable Energy LLC, its Manager, by Clenera, LLC, its Managing Member, by Jason Ellsworth, its Manager

Print Name/Firm

Owner [X] Agent [ ]

Special Use Project Guide
Effective January 1, 2013

Submittal Review Timelines

Overall review time will be 130-business days.

Administrative Review:	**10-business days**	
1st review	**5-business days**	**Accepted or Notice of deficiencies**
2nd review	**5-business days**	**Acceptance or Denial Letter**
Substantive Review:	**120-business days**	
1st review	**110-business days**	**Approved or Correction Letter**
2nd review	**10-business days**	**Approved or Denial Letter**

(Business days are defined as complete 8-hour working days.)

REMINDER: The project review process and timeframe is suspended when a project triggers the requirement for approval by an Outside Agency, the Planning and Zoning Commission, and/or the Board of Supervisors. If either the Planning and Zoning Commission or the Board of Supervisors approves the request contained in the application, then the Community Development Department will resume the project review process. If the Board of Supervisors denies the request, then the Community Development Department will consider the project to be denied.

Concept Plan Instructions for Special Uses

Sometimes, an applicant will seek approval for a particular special use or uses on a piece of property well ahead of actual construction or operation of that use. Often the exact dimensions of structures or configuration of uses on the property are not known yet until the uses have been approved and the applicant has invested resources into site planning. The Zoning Regulations (Section 1716.02.K.2) allow for the submittal of a "Concept Plan" in lieu of a site plan in the case of phased special uses on one property or a special use where construction is not anticipated within one year. However, if the use(s) are approved by the Planning and Zoning Commission, then a detailed site plan meeting the requirements of Section 1705 of the Zoning Regulations will be required for each use or phase, and shall be in substantial conformance with the approved special use. If the site plan is not within substantial conformance with the approved use and concept plan, then the special use will need to be reviewed, in a public hearing, by the Commission once again to modify the original proposal. **Note: any anticipated waivers of site development standards such as setbacks, screening, landscaping or parking spaces must be requested, justified, and approved by the Commission prior to the issuance of a building permit.**

In order to adequately review the proposed special use(s) on a piece of property, a Concept Plan must include at a minimum the following information:

- ☐ Parcel boundaries and adjacent roads;
- ☐ The general location, size and height of all structures and uses (existing and proposed), including minimum setbacks from parcel boundaries, washes and road travelways;
- ☐ The general location and minimum number of parking spaces to be provided, including proposed surface and width of driveways;
- ☐ Proposed screening and landscaping;
- ☐ Any significant topographical features (washes, hills, rock outcroppings, wetlands) and cultural features of the property and adjacent parcels;
- ☐ If applicable, project phasing (approximate schedule of uses and construction) and any other information deemed necessary to effectively review the Special Use.

THE SPECIAL USE APPLICATION PROCESS

Special Uses are activities with a greater potential for impacts on neighboring properties than the permitted uses in a Zoning District. Examples of Special Uses are manufacturing, RV Parks, guest ranches, hospitals and schools. These more intense uses must be carefully reviewed to decide if they could make good neighbors. For this reason, a Special Use Permit requires a public hearing and approval by the Planning and Zoning Commission before it is allowed. For more detail review the adopted process in the Zoning Regulations Section 1716.

The following summarizes the steps involved in processing a Special Use Permit:

Step 1- Attend an informal pre-application meeting with County staff to review the Site Plan and discuss requirements and procedures.

Step 2- Complete the Citizen Review Process to be submitted as part of the application. The Citizen Review Process is explained at the pre-application meeting noted in Step 1.

Step 3 - Submittal of the attached application with completed questionnaire, citizen review report, Site Plan, and all attachments.

The information you provide on this form will help the Planning Department and the Planning and Zoning Commission make a fair and accurate review of your proposed Special Use.

While the form may seem long the questions are designed to be as straightforward as possible. It is important to answer every question that applies to your proposed use completely. *The Planning Department will be happy to meet with the Applicant to answer any questions and to go over the application and site plan prior to formally submitting the packet and fee as well as after submittal.*

The application will be considered complete and will be accepted by the Planning Department after all items in the checklist of required submittals are accurately completed and/or shown on the site plan, the fees are paid and the project is fully described by answering the questions in the questionnaire. *Failure to provide all the information needed to process the application could result in a delay of the Special Use process. Fees for a Special Use are payable to the Cochise County Treasurer. (Note: This does not include associated building permit fees if the special use is approved).*

Step 4 - Technical Review by Interested Agencies

The Planning Department will ask for technical review from agencies that have expert knowledge of the proposed use. These agencies can include County Departments such as Highway and Floodplain and Health and Social Services, and local fire districts. State agencies such as the Fire Marshall or the Departments of Environmental Quality and Transportation are also notified, if necessary.

Step 5 - Analysis and Recommendation

The information provided by the Applicant and by reviewing agencies and an analysis of pertinent factors noted in the Section 1716.02 of the Zoning Regulations will be used by the Planning Department to analyze the request. A report will be written and a recommendation provided to the Commission.

Recommendations can include:

1. Approval;
2. Approval with conditions which help protect neighbors, the public, and the environment from noise, odors, dust or other impacts; or

3. Denial if it appears the proposal is not in the public interest or cannot be designed to be a good neighbor.

Occasionally, a hearing will be tabled for further information gathering.

Step 6 - Public Hearing and Planning Zoning and Commission Action

The Commission will hold a Public Hearing. This Public Hearing is usually held about six to eight weeks after an application is accepted.

The Planning Department will mail a notice of the public hearing to nearby property owners within 300 feet of the site. A legal notice is also placed in the local newspaper and posted on the Applicant's property.

The Public Hearing provides an opportunity for Applicants to explain their proposal to the Commission. It also offers an opportunity for the public to express support or concerns regarding the proposal.

The Planning Department recommends that Applicants take the time to discuss their proposal with neighbors before the Public Hearing. Such prior contact can go along way in relieving the natural worries of neighbors when a change is suggested on nearby property.

After the Public hearing is closed, the Commission will usually vote on the Special Use application. If the application is approved, associated building/use permit fees and follow-up inspections will be required.

The Commission action can be appealed to the Board of Supervisors by anyone who disagrees with the outcome. Appeals must be filed within fifteen (15) calendar days of the Commission action. The fee for an appeal is $600 and applications are available in Planning Department offices and on the Planning Department website: www.cochise.az.gov; at the upper menu click on Departments; scroll down to Planning and Zoning; on the left side menu scroll down and click on Planning Division; scroll down and click on Special Uses; scroll down and click on "Download Special Use Application"

SPECIAL USE FACTORS

Section 1716.02 of the Cochise County Zoning Regulations provides a list of ten (10) factors to evaluate special use applications. The Commission, and the Board if the special use is appealed, shall consider the criteria or factors listed below in deciding whether or not to approve a Special Use Permit.

Most special uses have both factors in favor and factors against. In a specific special use request, an individual factor may weigh more heavily than other factors. All factors will be analyzed and balanced against other factors when making a recommendation. Compliance or non-compliance with applicable special use criteria serves as the basis for analyzing the special use permit and determining factors in favor or factors against the special use. The special use factors represent policy decisions by the Commission and the Board, reducing uncertainty concerning their probable response to a given request. A property owner who adequately demonstrates compliance with the intent of Comprehensive Plan goals and policies may receive approval in spite of non-compliance with one of the other criteria. Conversely, a determination that unusual circumstances exist or there is great public protest pertaining to a special use request may result in a denial.

Compliance with applicable factors below constitutes factors in favor of the special use:

FACTORS FOR, OR AGAINST, THE SPECIAL USE REQUEST

Compliance with applicable factors below constitutes factors in favor of the special use:

A. Compliance With Duly Adopted Plans

The special use is consistent with Master Development Plans, transportation plans, Area Plans, the Growth Category and Land Use designation of the Comprehensive Plan and/or other land use plans, if any, that have been adopted for the area encompassing the special use.

B. **Compliance with the Zoning District Purpose Section**

The proposed special use shall comply with one or more of the purposes stated in the "Purpose" section of the applicable zoning district.

C. **Development along Major Streets**

The development limits the number of access points on major thoroughfares or arterial streets, and County collectors through the use of frontage roads, shared access, no access easements or other safe methods designed to minimize road cuts that create unsafe traffic conflicts, hazardous traffic congestion and obstruct the functioning of arterials.

D. **Traffic Circulation Factors**

1. The special use is consistent with preservation of the functions of surrounding streets as defined in Section 102.B.3 (a-g) of the Comprehensive Plan.

2. The special use does not result in the use of any residential street for non-residential through traffic.

3. Consideration of future circulation needs in the surrounding area have been taken into account through right-of-way dedication and off-site improvements, if warranted.

E. **Adequate Services and Infrastructure**

The following factors are used to determine if there are adequate services and infrastructure to serve the special use:

1. The Applicant has provided adequate information to evaluate the impacts on roads, other infrastructure and public facilities. The Applicant must demonstrate that there are adequate provisions to address the impacts identified; the applicant shall provide data supporting the estimated traffic volume as part of the application.

2. If the site accesses on a road where existing demonstrable traffic problems created by incremental development have already been identified, such as a high number of accidents, substandard road design or surface, or the road is near or over capacity. If so, the Applicant has proposed a method to address these problems.

3. The proposed development meets or will meet the applicable requirements for street, sewer, or water improvements.

4. The site has access to streets that are adequately designed and constructed to handle the volume and nature of traffic typically generated by the use.

F. **Significant Site Development Standards**

The special use adequately addresses the significant applicable site development standards, including development in or near a floodplain. The Applicant has adequately justified any waivers requested from site development standards.

G. **Public Input**

If there is major public opposition to a proposed special use, this may indicate that the technical evaluation regarding compatibility of the use does not concur with the view of local residents and a recommendation of denial may be appropriate. If public concerns have been raised, it is fair to ask if the Applicant has made a reasonable effort to address these concerns through the Citizen Review Process. If there is major public support of a proposed use, this may be a factor in favor of the request.

H. **Hazardous Materials**

Impacts from special uses that may involve hazardous materials have been adequately mitigated.

I. Off-site Impacts

Adequate measures have been taken to mitigate off-site impacts such as dust, smoke, noise, odors, lights or storm water run-off.

J. **Water Conservation**

The special use complies with the water conservation policies in Section 102.E of the County Comprehensive Plan.

Site Plan or Concept Plan

1. Site Plan

For special uses proposing a single, unphased project, a site plan in conformance with site plan requirements adopted in 1705 of the Zoning Regulations has been submitted. This site plan will serve as the plan for issuance of the building permit.

2. Concept Plan

In the case of phased special uses on one property or a special use where construction is not anticipated within one year, a concept plan may be reviewed by the Commission in lieu of the site plan requirements set forth in Section 1705. However, the issuance of a building/use permit for each use and/or phase shall be conditioned upon submittal of a site plan complying with the requirements set forth in Section 1705 and shall be in substantial conformance with the approved concept plan; at the time of permit issuance, if the special use is not in substantial conformance with the approved concept plan and is not within the general purview of the original notice, then the matter shall be heard at a public hearing before the Planning and Zoning Commission to modify the plan following the procedures set forth in Section 1716 herein. Note: Any anticipated waivers of the site development standards, such as setbacks, screening, etc., must be requested, justified and approved by the Commission prior to building permit issuance. The Concept Plan, at a minimum, includes:

- The type(s) of use(s) planned for the site is specified.
- The general location, size and height of all structures, location, surface and width of driveways, general location and number of parking spaces, setbacks, proposed screening and landscaping and any significant topographical features such as washes, wetlands, cultural, archaeological or historical sites, hills, and rock outcroppings.
- Project phasing.
- Other information deemed necessary to effectively review the special use.

3. Project Phasing

A statement has been submitted that a site plan will be submitted within one year of the first phase and building permits will be submitted for the entire project within 5 years.

COMMERCIAL USE/BUILDING PERMIT/SPECIAL USE PERMIT QUESTIONNAIRE
(TO BE PRINTED IN INK OR TYPED)

TAX PARCEL NUMBER 106-03-038-4

APPLICANT Babacomari Solar South LLC

ADDRESS c/o Clenera, LLC, PO Box 2576, Boise, ID 83701

CONTACT TELEPHONE NUMBER (208) 639-3232

EMAIL ADDRESS: layne.ashton@clenera.com

PROPERTY OWNER (IF OTHER THAN APPLICANT) Babacomari Ranch Company Limited Liability Limited Partnership

ADDRESS 3129 S. Highway 83, #4, P.O. Box 490, Sonoita, AZ 85637

DATE SUBMITTED October 6, 2020

Special Use Permit Public Hearing Fee (if applicable)	$ 2,000.00
Building/Use Permit Fee	
Total paid	$ 2,000.00

PART ONE - REQUIRED SUBMITTALS

1. Cochise County Joint Application (attached).

2. Questionnaire with all questions completely answered (attached).

3. A minimum of (6) copies of a site plan drawn to scale and completed with all the information requested on the attached Sample Site Plan and list of Non-residential Site Plan Requirements. (**Please note that nine (9) copies will be required for projects occurring inside the Uniform Building Code enforcement area. In addition, if the site plan is larger than 11 by 17 inches, please provide one reduced copy.)**

4. Proof of ownership/agent. If the applicant is not the property owner, provide a notarized letter from the property owner stating authorization of the Commercial Building/Use/Special Use Application.

5. Proof of Valid Commercial Contractor's License. (Note: any building used by the public and/or employees must be built by a Commercial Contractor licensed in the State of Arizona.)

6. Hazardous or Polluting Materials Questionnaire, if applicable.

OTHER ATTACHMENTS THAT MAY BE REQUIRED DEPENDING ON THE SCOPE OF THE PROJECT

1. Construction Plans (possibly stamped by a licensed Engineer or Architect)
2. Off-site Improvement Plans
3. Soils Engineering Report
4. Landscape Plan
5. Hydrology/Hydraulic Report

6. Traffic Impact Analysis (TIA): **Where existing demonstrable traffic problems have already been identified such as high number of accidents, substandard road design or surface, or the road is near or over capacity, the applicant may be required to submit additional information on a TIA.**
7. Material Safety Data Sheets
8. Extremely Hazardous Materials Tier Two Reports
9. Detailed Inventory of Hazardous or Polluting Materials along with a Contingency Plan for spills or releases

The Commercial Permit Coordinator/Planner will advise you as soon as possible if and when any of the above attachments are required.

PART TWO - QUESTIONNAIRE

In the following sections, thoroughly describe the proposed use that you are requesting. **Attach separate pages if the lines provided are not adequate for your response.** Answer each question as completely as possible to avoid confusion once the permit is issued.

SECTION A - General Description (Use separate sheets as needed)

1. What is the existing use of the property?

   Vacant / Grazing

   What is the proposed use or improvement?

   An 80MW(AC), photovoltaic (PV), utility-scale solar power generation facility, which is located on approximately 540 acres of private, open land being leased from the Babacomari Ranch Company.

2. Describe all activities that will occur as part of the proposed use. In your estimation, what impacts do you think these activities will have on neighboring properties?

   See Attached: Part Two: Section A, Question 2

3. Describe all intermediate and final products/services that will be produced/offered/sold.

   Solar generated electricity

4. What materials will be used to construct the building(s)? (Note, if an existing building(s), please list the construction type(s), i.e., factory built building, wood, block, metal)

   See Attached: Part Two: Section A, Question 4

5. Will the project be constructed/completed within one year or phased? One Year _____
   Phased ___ if phased, describe the phases and depict on the site plan.

   See Attached: Part Two: Section A, Question 5

6. Provide the following information (when applicable):

A. Days and hours of operation: Days: 365 Hours (from Sunrise AM to Sunset PM)

B. Number of employees: Initially: 1 Future: _____
Number per shift Seasonal changes See Attached: Question 6 B (this is a primarily unmanned facility)

C. Total average daily traffic generated:

(1) How many vehicles will be entering and leaving the site.

See Attached: Part Two: Section A (C) (1)

(2) Total trucks (e.g., by type, number of wheels, or weight)

See Attached: Part Two: Section A (C) (2)

(3) Estimate which direction(s) and on which road(s) the traffic will travel from the site?

North and South on State Highway 90

(4) If more than one direction, estimate the percentage that travel in each direction

NA

(5) At what time of day, day of week and season (if applicable) is traffic the heavies

There is not a given time, day of week or season that traffic will be heavier than any other time, day of week or season

Circle whether you will be on public water system or private well. If private well, show the location on the site plan.
Estimated total gallons of water used: per day See Attached: Part Two: Section A, 6 C (5) ***per year***_____

Will you use a septic system? Yes _____ No __X__ If yes, is the septic tank system existing?

Yes _____ No ___ Show the septic tank, leach field and 100% expansion area on the site plan.

G. Does your parcel have permanent legal access*? Yes X No ___ if no, what steps are you taking to obtain such access?

See Attached: A 6 G

*Section 1807.02A of the Cochise County Zoning Regulations stipulates that no building permit for a non-residential use shall be issued unless a site has permanent and direct access to a publicly maintained street or street where a private maintenance agreement is in place. Said access shall be not less than twenty (20) feet wide throughout its entire length and shall adjoin the site for a minimum distance of twenty (20) feet. If access is from a private road or easement provide documentation of your right to use this road or easement and a private maintenance agreement.

H. For Special Uses only - provide deed restrictions that apply to this parcel if any.

Attached _____ **NA** X

8. Identify how the following services will be provided:

Service	Utility Company/Service Provider	Provisions to be made
Water	On-site	Existing well connections
Sewer/Septic	NA	Porta-Potty
Electricity	NA	Powered by facility
Natural Gas	NA	NA
Telephone	NA	NA
Fire Protection	Local Fire District	On-site connections or installed wells

SECTION B - Outdoors Activities/Off-site Impacts

1. Describe any activities that will occur outdoors.

   The generation of solar power generated electricity

2. Will outdoor storage of equipment, materials or products be needed? Yes _____ No X_____ if yes, show the location on the site plan. Describe any measures to be taken to screen this storage from neighboring properties. See Attached: Section B (2) The site is quite remote and significantly set back from Highway 90, Highway 82 and neighboring properties

   e.g. (3.8 miles to Whetstone and 4.25 miles to Huachuca City). This being the case, screening is not planned for the site.

Will any noise be produced that can be heard on neighboring properties? Yes ____ No X____ if yes; describe the level and duration of this noise. What measures are you proposing to prevent this noise from being heard on neighboring properties?

No

3. Will any vibrations be produced that can be felt on neighboring properties? Yes ___ No X if yes; describe the level and duration of vibrations. What measures will be taken to prevent vibrations from impacting neighboring properties?

   No

4. Will odors be created? Yes _____ No X____ If yes, what measures will be taken to prevent these odors from escaping onto neighboring properties?

   No

5. Will any activities attract pests, such as flies? Yes ____ No__X If yes, what measures will be taken to prevent a nuisance on neighboring properties?

   No

6. Will outdoor lighting be used? Yes X No ____ If yes, show the location(s) on the site plan. Indicate how neighboring properties and roadways will be shielded from light spillover. Please provide manufacturer's specifications.

7. Do signs presently exist on the property? Yes ____ No ___X_ If yes, please indicate type (wall, freestanding, etc.) and square footage for each sign and show location on the site plan.

   A._____ B._____ C._____ D._____

8. Will any new signs be erected on site? Yes X___ No ____ If yes, show the location(s) on the site plan. Also, draw a sketch of the sign to scale, show the copy that will go on the sign and **FILL OUT A SIGN PERMIT APPLICATION** (attached). EXPECTED SIGNS ARE EXEMPT PER COUNTY ZONING ORDENANCE

9. Show on-site drainage flow on the site plan. Will drainage patterns on site be changed?

   Yes _____ No X___

   If yes, will storm water be directed into the public right-of-way? Yes _____ No _____

   Will washes be improved with culverts, bank protection, crossings or other means?

   Yes X No _____

   If yes to any of these questions, describe and/or show on the site plan.

10. What surface will be used for driveways, parking and loading areas? (i.e., none, crushed aggregate, chipseal, asphalt, other)

    See Attached: Section B 10

11. Show dimensions of parking and loading areas, width of driveway and exact location of these areas on the site plan. (See site plan requirements checklist.)

12. Will you be performing any off-site construction (e.g., access aprons, driveways, and culverts)? Yes ___X engineered crossing at wash_ No ___ If yes, show details on the site plan. **Note: The County may require off-site improvements reasonably related to the impacts of the use such as road or drainage improvements.**

SECTION C - Water Conservation and Land Clearing

1. If the developed portion of the site is one acre or larger, specific measures to conserve water on-site must be addressed. Specifically, design features that will be incorporated into the development to reduce water use, provide for detention and conserve and enhance natural recharge areas must be described. The Planning Department has prepared a *Water Wise Development Guide* to assist applicants. This guide is available upon request. If the site one acre or larger, what specific water conservation measures are proposed? Describe here or show on the site plan submitted with this application.

   See Attached: Section C 1

2. How many acres will be cleared? See Attachment: C 2
If more than one acre is to be cleared describe the proposed dust and erosion control measures to be used

(Show on site plan if appropriate.) _____

_____

_____

_____

SECTION D - Hazardous or Polluting Materials

Some businesses involve materials that can contaminate the soil, air, water, waste disposal system or environment in general. Precautions must be taken to protect the environment when such products are distributed to or from the site, stored, manufactured, processed, disposed of, or released as raw materials, products, wastes, emissions, or discharges (When sold or incorporated in a product these materials are required to have Material Safety Data Sheets (MSDS) supplied by the manufacturer.) Examples of such products include but are not limited to paint, solvents, chemicals and chemical wastes, oil, pesticides, herbicides, fertilizers, radioactive materials, biological wastes etc.

Does the proposed use have any activities involving such materials?

Yes ___ No X ___ If yes, complete the attached *Hazardous or Polluting Materials Use Questionnaire.*

Note: Depending on quantities, this question does not apply to ordinary household or office products or wastes such as cleansers, waxes or office supplies. Answer YES only if the materials are involved in the commercial or special use process or if landscaping or maintenance chemicals (pesticides, fertilizers, paints, etc.) will be present in quantities greater than 50 pounds (solids) or 25 gallons (liquids).

If you answer NO to this question but in the County's experience, the type of business proposed typically uses such materials, you will be asked to complete the *Hazardous or Polluting Materials Questionnaire* prior to processing this Commercial Use/ Building/ Special Use Permit.

Applications that involve hazardous or polluting materials may take a longer than normal processing time due to the need for additional research. The Arizona Department of Environmental Quality Compliance Assistance Program can address questions about Hazardous Materials (1-800-234-5677, ext. 4333).

SECTION E - Applicant's Statement

I hereby certify that I am the owner or duly authorized owner's agent and all information in this questionnaire, in the Joint Permit Application and on the site plan is accurate. I understand that if any information is false, it may be grounds for revocation of the Commercial Use/ Building/ Special Use Permit.

Applicant's Signature _____

Babacomari Solar North LLC
By: CRE-Babacomari Arizona LLC, its Member
By: Parasol Renewable Energy Holdings LLC, its Member
By: Parasol Renewable Energy LLC, its Manager
By: Clenera, LLC, its Managing Member
By: Jason Ellsworth, its Manager

Print Applicant's Name _____

Date signed October 6, 2020

Babacomari Solar South LLC

SPECIAL USE PROJECT APPLICATION
PART TWO – QUESTIONNAIRE
(Questions that could not be responded to in the space provided on the Application)

SECTION A – GENERAL DESCRIPTION

Question 2. Describe all activities that will occur as part of the proposed use. In your estimation, what impacts do you think these activities will have on neighboring properties.

Babacomari Solar South LLC ("Babacomari South") is proposing to develop a hybrid 80MW, photovoltaic (PV) utility-scale solar power generation facility ("Facility"). The Facility is "hybrid" in the sense that it will have both photovoltaic (PV) modules with the possibility of an energy storage system ("ESS"). As you know, the PV modules capture the energy of the sun to convert that power to electricity during sunny, daylight hours. The ESS allows excess electricity generated during the day to be stored for distribution to the grid when the PV modules are not generating electricity e.g., at night, cloudy days, etc. The Facility will be constructed on approximately 550 acres of private, open land near the towns of Whetstone and Huachuca City, Arizona. Of note, cattle grazing is the current land use.

Per **Cochise County Zoning Ordinance, Section 1824**, "Solar Energy Power Plants are . . . allowed as a Permitted Use in LI and HI and may be permitted in RU and GB Zoning Districts by Special Use Authorization only." The land in question is currently zoned RU-4, as such the proposed use will be permitted when the Special Use Permit application is approved.

It is expected that the Facility will have minimal to no impact on neighboring properties. The Facility's location is remote, and as can be observed in the attached visual simulations, the Facility will not be visible from Whetstone, Huachuca City, Highway 82, or Highway 90, so the scenic viewshed will not be negatively impacted. Also, the facility will not emit odors, nor generate any perceivable noise.

In addition, PV modules are non-glare and are designed to absorb rather than reflect the sunlight reaching the modules. By way of example, PV modules are generally less reflective than windows.

In terms specific to glare, according to the web site **Solar Feeds**' article **"*Top 8 Solar-Powered Airports in the World*," dated September 26, 2019**, some of the major airports in the U.S. and around the world have a significant number of PV solar panels providing power to the airports during the day, demonstrating that glare should not be an issue airplanes and airports, let alone residences. For example:

- The Cochin International Airport in Kochi, India, has an installed solar capacity of 52MWh/day
- The San Diego International Airport hybrid (solar modules & EES) has an installed capacity of 5.5MW, as well as 4MWh of EES storage
- The Minneapolis-St. Paul International Airport PV system provides 20% of the electricity used in Terminal One, plus its 7,700 metal halide light fixtures in its four parking lamps
- The Tampa International Airport has a capacity of 2MW

It is worth noting that Fort Huachuca has a solar facility on site.

Finally, per **Article 16, LIGHT POLLUTION of the County Zoning Ordinance**, the Facility will use fully shielded lighting. Babacomari South may also use low-pressure sodium lamps, along with a minimal amount of broad-spectrum lighting such as LED (5% - 10%), combined with the LPS lighting, thus protecting dark night skies from light pollution.

Question 4. What materials will be used to construct the building(s)?
There will be at least one control building at the switchyard. This will be a factory-built, prefabricated building set on a concrete foundation. A typical substation-specific control building averages approximately 35' x 12' at 12' and is a steel building and steel roof construction.

Question 6 B. Number (of employees) per shift Seasonal changes
Babacomari South will be operated and monitored remotely, therefore, it will primarily be an unmanned facility. However, it is anticipated that a maintenance employee or contractors will be on site regularly and during all four-seasons conducting maintenance, cleaning PV modules (as necessary), vegetation management, security, etc.

Question 6 C 1: How many vehicles will be entering and leaving the site?
Again, Babacomari South is primarily an unmanned facility, therefore, it is expected that perhaps one to two vehicles will be on site at any given time. At those times during routine maintenance and vegetation management, there may be two to five vehicles on site. It is expected that personnel arriving at the site will use passenger vehicles e.g. automobiles and light pickup trucks.

Question 6 C: Circle whether you will be on public water system or private well. If private well, show the location on the site plan.
Public water will not be used. The private well which we expect to use is noted on the Concept Plan Map. See attached Concept Plan Map

Question 6 G: Does your parcel have permanent legal access?
Yes. Access to the project site will be at a gated turn-out approximately 2.5 miles south of Highway 82 and Highway 90 intersection at Whetstone. This access point has been utilized in the past for a gravel pit previously located on site and is presently used by the landowner for accessing the property and ranching operations. There is currently a deceleration lane at the turn-out.

SECTION B – OUTDOOR ACTIVITIES / OFF-SITE IMPACTS

Question 2. Describe any measures to be taken to screen view from neighboring properties
It is our estimation that Babacomari South will not require landscaping or screening as the project is provided with significant natural barriers, including topography, vegetation and, the greatest of which, distance. For example, the Facility is located two miles south of Highway 82; four miles to the Highway 82 and Highway 90 intersection at Whetstone; four miles to Huachuca City; and 5 miles to Elgin (over the local hills). Furthermore, four visual simulations taken from strategically located observation points have been prepared by an independent third party to illustrate that topography, vegetation and the distance from population centers provide significant natural buffers to protect the viewshed. This being the case, again, it is our expectation that no additional landscaping or shielding will be necessary. See attached: Visual Simulations

Question 6: Will outdoor lighting be used? Indicate how neighboring properties and roadways will be shielded from light spillover.

Yes, outdoor lighting will be used. Notwithstanding, as an unmanned facility, only a nominal amount of outdoor lighting will be necessary. As already noted, the Facility will use fully shielded, low-pressure sodium lamps (LPS) to achieve the stated purposes of **Cochise County Zoning Ordinance Article 16,** which includes, among others "to protect and enhance the lawful nighttime use and enjoyment of all property through protection of and access to the dark night skies, and to encourage the conservation of energy and other resources." However, it needs to be noted that LPS light provides essentially no color rendition, so it is inappropriate for any use where 1) color perception is important, and 2) where LPS will be the only light source. Owing to this, multiple Arizona cities, including Flagstaff and Tucson combine LPS with another lamp types (e.g. incandescent or LED) on poles and fixtures. The **Flagstaff Dark Skies Coalition** cites a study which demonstrated that color perception is restored, and overall lighting quality improved with a small amount of broad-spectrum lighting (5% - 10%) combined with LPS lighting.

A specific lighting fixture type and vendor have not been identified yet; this information will be provided at the time a building permit is applied for.

Question 8: Will any new signs be erected onsite?

Yes. Per **Cochise County Zoning Ordinance Section 1902.01B,** the signs that will be posted at Babacomari South are exempt from obtaining a sign permit. Signage will be limited to power plant-appropriate signs that will be attached to the perimeter fencing and within the Facility. Such signs will include the following: Gate Numbers; No Trespassing; High Voltage; DANGER; Emergency Contact Information; and other similar warning, notification signs and safety signage.

Question 9: Show on-site drainage flow on the site plan. Will drainage patters on site be changed?

See attached: Concept Plan Map

Per an email from County Planner II Robert Kirschmann, dated June 12, 2020, it is not necessary to submit a hydrology report with the Special Use Application, but one will be provided with the building permit application. Notwithstanding, it is worth noting that the project area will be temporarily disturbed during construction and it is possible that some minor topography changes may occur. However, efforts will be made to return the site to its original topography and drainage patterns.

Additionally, temporary disturbance areas will be restored and reclaimed using certified weed-free, native seed mixes to achieve preconstruction plant conditions. This revegetation will assist in restoring site drainage as well as to control erosion. The vegetation will also serve to allow storm water to naturally seep into the ground and aquifer.

Will washes be improved with culverts, bank protection, crossings, or other means?

Yes. Access on the primary, private road to the Facilities will require crossing a wash, and it will be necessary to provide engineered improvements at the crossing. The engineered crossing design will be addressed in a manner satisfactory to Cochise County before the building permit is applied for.

Question 10: What surface will be used for driveways, parking and loading areas?

Per **Cochise County Code 1804.5**, the driveway and parking stall will be unimproved.

Question 11: Show dimensions of parking and loading areas, width of driveway and exact location of these areas on the site plan.

The unimproved post-construction driveway and parking space will be at the switchyard for Babacomari South. There will be one, 12'-wide driveway, and one 9' x 19' parking space at the Facility.

Question 12: Will you be performing any off-site construction e.g., access aprons, driveways, and culverts.
TBD. Babacomari South will work with Arizona Department of Transportation to determine requirements, if any, entering the site from Highway 90. However, if improvements are required, those improvements will be constructed in cooperation and accordance with ADOT and Cochise County standards.

SECTION C – WATER CONSERVATION AND LAND CLEARING

Question 1: The PV technology that is being utilized at both Babacomari South does not require the consumption of water in the generation of electricity. In addition, using Clēnera's operating facility located in Sahuarita, AZ, as a barometer, frequent PV module washing will not be required due to the arid nature of the Arizona desert. For example, in four years of operation, the Sahuarita facility's modules have never needed to be washed.

Question 2: How many acres will be cleared? If more than one acre is to be cleared describe the proposed dust and erosion control measures to be used.
The Babacomari South site is 550 acres, and much of this acreage will be cleared at one point or another during construction. A water truck, or possibly environmentally safe polymers, will be used for dust control; silt fences; coir logs (coconut fiber), coir blankets, etc., will be used to reduce water erosion during construction. Post-construction, the only permanently cleared land will be land area used for a switchyard, inverter skids, battery stations, and a control building. Total cleared acreage, including interior roads, will be provided when the engineering on Babacomari South has been completed and the building permit plan is submitted.

As previously mentioned, the soil will be stabilized and the site will be reseeded with native grasses, which will serve as natural erosion control and dust mitigation measure.

SECTION D – HAZARDOUS OR POLLUTING MATERIALS

Question: Does the proposed use have any activities involving such materials (Examples of such products include but are not limited to paint, solvents, chemicals and chemical wastes, oil, pesticides, herbicides, fertilizers, radioactive materials, biological waste, etc.
NA. Per an email from County Planner II Robert Kirschmann, dated June 16, 2020, it is not necessary for Babacomari South to submit a Hazardous or Polluting Materials Form. However, because several neighbors inquired about PV modules and possible hazardous waste, it is worth noting that, according to the **Massachusetts Department of Energy Resources**, **"Questions & Answers: Ground Mounted Solar Photovoltaic Systems,"** PV module materials are enclosed, and do not mix with water or vaporize into the air, so there isn't risk of chemical releases to the environment, and even in the case of module breakage, there is little to no risk of chemicals releasing into the environment.

Babacomari Solar North LLC & Babacomari Solar South LLC

SPECIAL USE PROJECT APPLICATION
SPECIAL USE FACTORS

The Cochise County Zoning Regulations Section 1716.02 provides a list of ten factors to evaluate special use applications. Compliance with applicable factors constitutes factors in favor of the Special Use Authorization request:

A. Compliance with Duly Adopted Plans
The Babacomari North and Babacomari South project areas are compliant with the **Cochise County Zoning Ordinance**; the **County Area Plan**; and the **County Comprehensive Plan**. Of note, per **Cochise County Zoning Ordinance 1716.03** the Growth Area is "D/Intensive Use," which specifically calls out that the area is suitable for electric generation plants.

B. Compliance with the Zoning District Purpose
The site location is RU-4, as established in the **Cochise County Zoning Ordinance Article 6**.

C. Development Along Major Streets
NA

D. Traffic Circulation Factors
NA

E. Adequate Services and Infrastructure
Babacomari North and Babacomari South will require both fire and police protection, which we anticipate will be provided by the local fire district and police/sheriff's department, and such arrangements for service will be made with those agencies. In addition, the Facilities will work with those agencies to develop an Emergency Management Plan tailored to address the specific needs of the Babacomari North and Babacomari South. In addition, it is worth noting that since it is anticipated that an ESS will be developed on the sites, the ESS will be housed in conex-type buildings with dedicated fire suppression systems. In addition, the primary materials utilized in the PV module array are steel, aluminum, copper, and glass (silicon), so they do not provide fuel for a fire.

In addition, for the safety of the public and the premises, the both Facilities will be surrounded by an 8' perimeter fence with strands of barbed wire on the top. There will also be secure access gates and on-site monitoring systems, managed remotely.

There will not be a need for municipal water, garbage/waste collection, or sewage lines at the site. Also, as all roads on-site will be private, Cochise County will not need to provide road maintenance.

Of note, as these will be unmanned facilities, public sewage services or a septic system will not be required.

F. Significant Site Development Standards

- Floodplain: Neither Facility is being constructed on a floodplain, rather each Facility site is Zoned "X" by FEMA.
- Parking: As previously noted, an unimproved driveway and parking stall will be constructed.
- Screening: As illustrated in the Visual Simulations, natural buffers, including distance, topography and vegetation create excellent screening of the Facility
- Lighting: The facility will use fully shielded fixtures and low-pressure sodium lamps (LPS), with 5% - 10% of broad-spectrum lighting, such as LED (5% - 10%).

G. Public Input – Citizen Review Report

As required by **Coconino County Zoning Ordinance 22, Citizen Review Process**, Clēnera reached out to Babacomari North and Babacomari South's neighbors for their comments, questions, concerns, and/or objections to the Facilities. Clēnera mailed a letter and a flyer on July 1, 2020, advising neighboring property owners of the proposed Babacomari North and Babacomari South Facilities. The letter and flyer were reviewed and approved by Robert Kirschmann prior to mailing – these two documents are included, as are the area maps requested by our neighbors. The mailing was sent to neighbors within a one (1) mile radius of the Babacomari Ranch Company parcel boundary as directed by Mr. Kirschmann, who also provided the names and addresses of those neighbors Clēnera contacted by mail. The letter and flyer were mailed to our neighbors on July 1, 2020, who were provided an email address and mailing address for communicating recommendations, comments, concerns, support, objections, etc. Our neighbors were given through July 17, 2020, to submit their comments for inclusion with this special use permit application. There were a few neighbors who reached out after 17 July, and their comments are also included. In total, nineteen neighbors submitted comments and questions, and all nineteen neighbors received a response from Clēnera – all correspondence between our neighbors and Clēnera is attached for your review. Of note, Clēnera received several comments of total support, as well as a few that were opposed to the project, but most of our neighbors simply had questions, which we addressed. Clēnera will continue to respond to any future comments or questions from our neighbors.

See attached: Citizen Review Process Flyer and Letter
See attached: Citizen Review Process Correspondence

H. Hazardous Materials

The Facility will not utilize hazardous materials.

I. Off-site Impacts

It is expected that there will not be any off-site impacts e.g., noise, odors, light pollution, storm water run-off, dust, or smoke.

J. Water Conservation

Photovoltaic solar power generation facilities do not use water in the generation of electricity.

Babacomari Solar North LLC & Babacomari Solar South LLC

SPECIAL USE PROJECT APPLICATION
SUPPLEMENTAL INFORMATION

Pre-Application Confirmation Meeting with Cochise County Planner II

A pre-application confirmation meeting was held via telephone on January 15, 2020, between Mr. Robert Kirschmann, Planner II, Cochise County Development Services Department, and Mr. Layne Ashton, Development Manager, Clēnera, LLC.

Description of the Applicant

Babacomari North and Babacomari South are utility-scale power generation facilities, to be located on 550 acres, and 550 acres, respectively, of open land owned by Babacomari Ranch Co., near the towns of Whetstone and Huachuca City in Cochise County, Arizona. The Facilities are being developed, constructed, and operated by Clēnera, LLC (Clēnera), a privately held renewable energy company headquartered in Boise, Idaho. Combining breakthrough technology with a deeply integrated team approach, Clēnera provides reliable, affordable energy systems and helps its partners become clean energy leaders in their communities. Clēnera's current operating portfolio exceeds 1.3 GW, with more than 14 GW of solar and storage assets in development. Learn more at www.clenera.com.

Description of the Project

Babacomari North and Babacomari South are each proposing to develop hybrid 80MW, photovoltaic (PV) utility-scale solar power generation facilities, which are also designed to allow for an optional energy storage system (ESS) in the future, which will increase the nameplate capacity of each facility. It is the addition of an EES system that make these Facilities "hybrid."

The PV modules capture the energy of the sun to convert that power to electricity during daylight hours. The ESS allows any excess electricity generated during the day to be stored for distribution onto the grid when the PV modules are not generating electricity e.g., at night, cloudy days.

The primary materials utilized in the PV module array are steel, aluminum, copper, and glass (silicon). The solar modules are connected to solar inverters which convert DC electricity to AC electricity. The inverters are then joined in series and parallel, ultimately connecting to the project substation. Within the Project substation, a main power transformer steps up the voltage from the collection system voltage to the 138kV Fort Huachuca-Vail transmission line owned by TEP.

Of note, there are roughly 540 modules per acre, and 2,700 modules per MW, or approximately 432,000 modules for both Facilities. The module vertical height will be approximately fifteen (15) feet from the ground-level on single-axis trackers, which track east to west to follow the sun, and the rows run north-south.

For public safety and security purposes the entire perimeter of the Facility will be surrounded by an 8' chain link fence, with strands of barbed wire at the top, with secure access gates and on-site monitoring systems managed remotely.

Land Ownership

Babacomari North and Babacomari South have secured a 20-year lease, with the option to renew the lease for three, five-year extensions, from the Babacomari Ranch Company for the construction and operation of the Facilities on Parcel Number 106-03-03804. The Babacomari North Facility will be constructed on 550 acres of land, while the Babacomari South Facility will be constructed on 550 acres.

Construction of the Facility

Follows are some of the items associated with the construction of the Babacomari North and Babacomari South Facilities, which of note will be constructed simultaneously. Please note that *the information below is for the construction of both facilities*. Also, a separate application is being submitted for each of the facilities, meaning each facility will have its own SUP.

- Rough estimate of the number of employees at the peak of construction: 350 (it is anticipated that many will be locals)
- At the peak of construction, a rough estimate of vehicles entering and leaving the site daily: 60
- Rough estimate of freightliners with oversize loads over the entire construction process: 90
- Rough estimate of day, day of week and season traffic will be heaviest (at peak of construction): 6:00 a.m. to 6:00 p.m. throughout the approx. 8 – 10 months of construction period.
- Construction water: non-potable water will be required for dust control. An estimate is not available currently. It is anticipated that some, if not all the construction water will come from an existing well on the Babacomari Ranch Company parcel.

Benefits to the Community

- Babacomari North and Babacomari South are committed to being good neighbors and good environmental stewards in Cochise County
- Cochise County will receive a cumulative total of approximately $6.1 million in tax revenue from the Facilities
- Approximately 350 construction jobs will be created at peak construction; it is anticipated that many of those construction workers will be locals from the area
- During construction, and owing to non-local construction workers, the local cities will see an increase in hotel lodgings; restaurant patronage; grocery and convenience store revenues; laundromat usage, and gas station patronage, etc.
- Between Babacomari North and Babacomari South, there will be enough electricity generated to power the equivalent of approximately 54,400 Arizona homes
- Although the Facilities will be operated and monitored remotely, it is expected that there will be at least one or possibly two full-time maintenance technician's post-construction

Babacomari North and Babacomari South's Impact on Local Property Values

In July 2019, the **Solar Energy Industry Association** published "***Solar and Property Values: Correcting the Myth that Solar Harms Property Value*,"** which cited research supporting the following:

- Examining property value in states across the United States demonstrates that large-scale solar arrays often have no measurable impact on the value of adjacent properties, and in some cases may even have positive effects.
- Proximity to solar farms does not deter the sales of agricultural or residential land.

- Large solar projects have similar characteristics to a greenhouse or single-story residence. Usually no more than 10 feet high, solar farms are often enclosed by fencing and/or landscaping to minimize visual impacts

In addition, the results of a survey conducted by the **Policy Research Project (PRP), LBJ School of Public Affairs, The University of Texas at Austin**, May 2019 "*An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations*," written by Leila Al-Hamoodah, et. al., "show that while a majority of survey respondents estimated a value impact of zero, some estimated a negative impact associated with close distances between the home and the Facility, and larger Facility size. Regardless of these perceptions, geospatial analysis shows that relatively few homes are likely to be impacted."

Furthermore, the **U.S. Department of Energy's National Renewable Energy Lab** (NREL) states that, " . . . numerous studies have found the impact of wind energy generation on neighboring property values to be negligible. As solar farms do not have the same impacts as wind farms (i.e., PV facilities do not cast a shadow on neighboring properties, cause light flicker, or have the same visual impact as wind farms), the impacts on property values caused by solar farms are anticipated to be less than the impacts of wind farms."

Bearing the SEIA, University of Texas and NREL studies in mind, and considering that Babacomari North and Babacomari South are 1) buffered by distance, topography and vegetation so they will not negatively impact the viewshed; and 2) they will not produce noise or emit odors. Therefore, it is expected that there will be no adverse effect on local property values caused by the Facilities.

Environmental Factors

The Facilities will produce 100% clean, renewable energy. There will be no CO_2 or other toxic air pollutants generated, so they will not be a contributor to the County's carbon footprint. Solar generated power is 100% renewable and is a clean alternative to fossil fuel-burning power plants, including natural gas-fired power plants.

Some of the benefits of clean, renewable solar energy is the ability to avoid other negative effects of fossil fuels such as:

- Smog and declining air quality
- Respiratory ailments and other health impacts
- The release of toxins such as mercury and other greenhouse gasses
- Water and ground pollution
- Impacts to wildlife and ecosystems

Between both Babacomari North and Babacomari South, these facilities will:

- Offset approx. 750 million pounds of CO_2 annually
- The CO_2 offset is equivalent to avoiding approximately 38,500 gallons of gasoline burned annually

Noise: System equipment operates with indiscernible noise.

Water: No water is consumed in the operation of the facilities.

Odor: No odor will be generated by the facilities.

Vegetation Management: Following both the construction and the 35-year end of useful life of the Facility, the soil will be stabilized, and the area reseeded with native seed varieties. This means that, during its useful life, flora and fauna will maintain habitat. Then, at the end of the useful life, the land area will be returned to the original condition of open space. In addition, the reseeding and soil stabilization both during operation as well as post useful life will contribute to appropriate drainage and limit erosion while allowing storm water to seep into the local aquafer.

In terms of weed control and invasive species management, the Facilities recognize that an indirect impact of development may include the spread of noxious weed species resulting from construction equipment introducing seeds into new areas, or erosion or sedimentation due to clearing ground in the construction areas. The prevention of invasive vegetation species may include spraying in accordance with local, state, and federal regulations. Also, typical best management practices during construction will include cleaning vehicles and equipment arriving from areas with known invasive species issues and using locally sourced topsoil if needed.

September 4, 2020

Robert Kirschmann
Planner II
Cochise County Planning & Zoning
1415 Melody Lane, Bldg. F
Bisbee, AZ 85603

Dear Mr. Kirschmann:

I, Chares McChesney of Babacomari Ranch Company LLLP, authorize Babacomari Solar North LLC and Babacomari Solar South LLC to submit special use permit applications associated with the solar power plant projects they are developing on the Babacomari Ranch Company property.

Sincerely,

Charles McChesney, Managing Member
Babacomari Management LLC, General Partner
Babacomari Ranch Company LLLP

NOTARY FORM

STATE OF California)

COUNTY OF Santa Barbara)

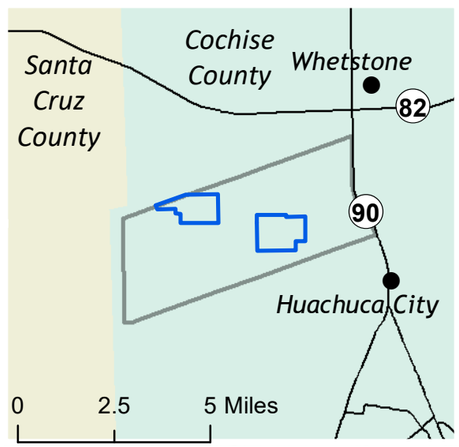
I, Yesenia Torchia. a Notary Public, do hereby certify that on this 4th day of September, 2020, personally appeared before me Charles McChesney, known to me to be the person whose name is subscribed to the foregoing instrument, and swore and acknowledged to me that he executed the same for the purpose and in the capacity therein expressed, and that the statements contained therein are true and correct.

Notary Public, State of California

Name, Typed or Printed: Yesenia Torchia

My Commission Expires: 03/21/2021

YESENIA TORCHIA
Notary Public - California
Santa Barbara County
Commission # 2184425
My Comm. Expires Mar 21, 2021



Project Substation

Babacomari Solar North Site 80 MW

Babacomari Solar South Site 80 MW

Utility Easement

Access Road

138 kV Transmission line Fort Huachuca - Vail

Unimproved driveway and unimproved parking space

150' Setback from parcel boundary

150' Setback from Highway 90

3,000' Setback from parcel boundary

Access Point

Well

Engineered Crossing

T020S R019E

T020S R020E

T021S R018E

T021S R019E

T021S R020E

20 21 22 23 24 19 29 28 27 26 25 30 36 31 32 33 34 35 36 31 06 05 04 03 02 01 06

0 0.5 1 Miles

Clēnera

Babacomari North & Babacomari South CONCEPT PLAN

Project Area and 10' Fence

Parcel Boundary*

Utility Easement

Well location

Drainage

Access road

State Land

Flood Plain

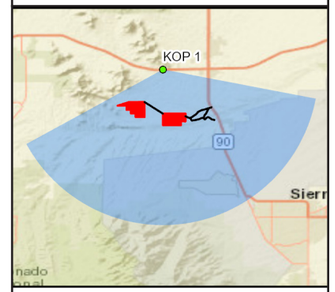
Notes: 1) Natural screening provided by distance, topography & vegetation
2) Structures: Solar modules 10'-15' high
3) Disclaimer: panel layout is conceptual and subject to change
4) *Heavy gray line is Babacomari Ranch Co.'s entire parcel boundary, not the project area

KOP 1 - Existing Condition: Arizona State Route 82 and North Rascal Ranch Road, looking southeast

KOP 1 - Proposed Project: Arizona State Route 82 and North Rascal Ranch Road, looking southeast

Babacomari Solar Project

KOP 1
Arizona State Route 82 and North Rascal Ranch Road



Base Photographic Documentation

Date	05/27/2020
Time (24H)	10:00
Longitude (°)	-110.392689
Lattitude (°)	31.691717
Viewpoint Elevation (ft)	4,605
Camera Height (m)	1.2
Camera Heading(deg.)	170

Camera Information

Camera Make & Model	Nikon D5600
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	AF-P Nikkor 18-55 mm
Lens Focal Legth	22mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	100 E
Sun Elevation (°)	58
Lighting Angle on Project	Side Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	85
Humidity (%)	8

Proposed Infrastructure Information

Closest Distance to Panels	2.3 miles

How to View at Real World Scale

Tabloid Size Print, distance from face	7.33 inches

Simulation Created Using:
ArcGIS Pro; Adobe Photoshop;
Google EarthPro

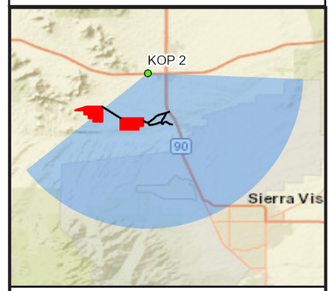
Provided by
SWCA®
ENVIRONMENTAL CONSULTANTS

KOP 2 - Existing Condition: Arizona State Route 82 and Sands Ranch Road, looking south

KOP 2 - Proposed Project: Arizona State Route 82 and Sands Ranch Road, looking south

Babacomari Solar Project

KOP 2
Arizona State Route 82
and Sands Ranch Road



Base Photographic Documentation

Date	05/26/2020
Time (24H)	14:15
Longitude (°)	-110.367369
Lattitude (°)	31.692593
Viewpoint Elevation (ft)	4,451
Camera Height (m)	1.2
Camera Heading(deg.)	160

Camera Information

Camera Make & Model	Nikon D5600
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	AF-P Nikkor 18-55 mm
Lens Focal Legth	22mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	255 WSW
Sun Elevation (°)	62
Lighting Angle on Project	Side Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	88
Humidity (%)	7

Proposed Infrastructure Information

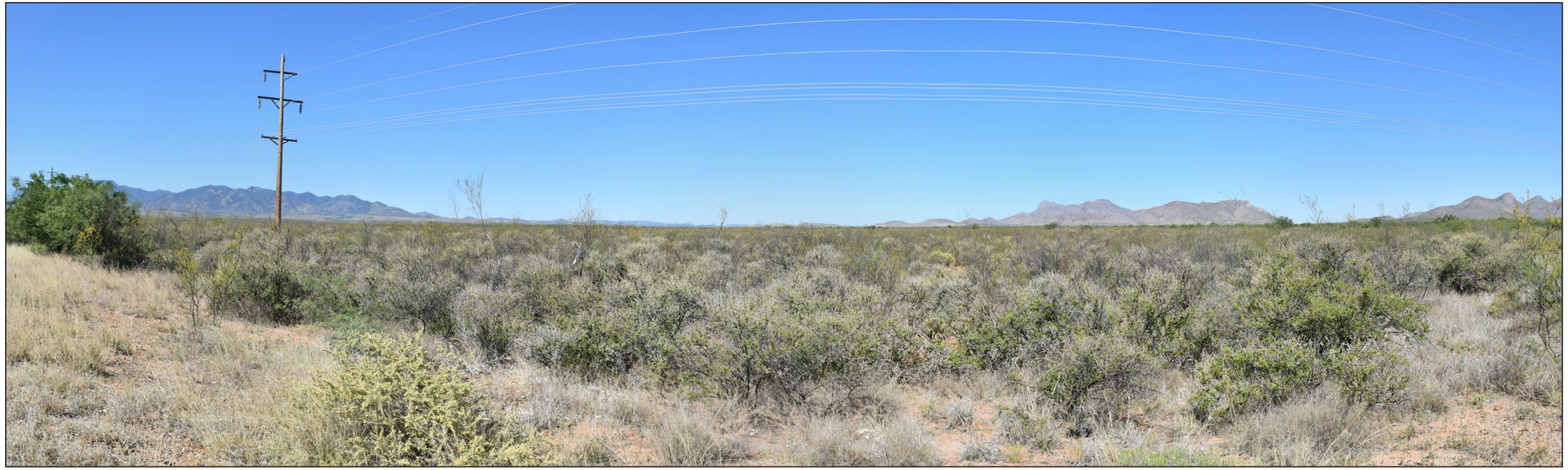
Closest Distance to Panels	2.9 miles

How to View at Real World Scale

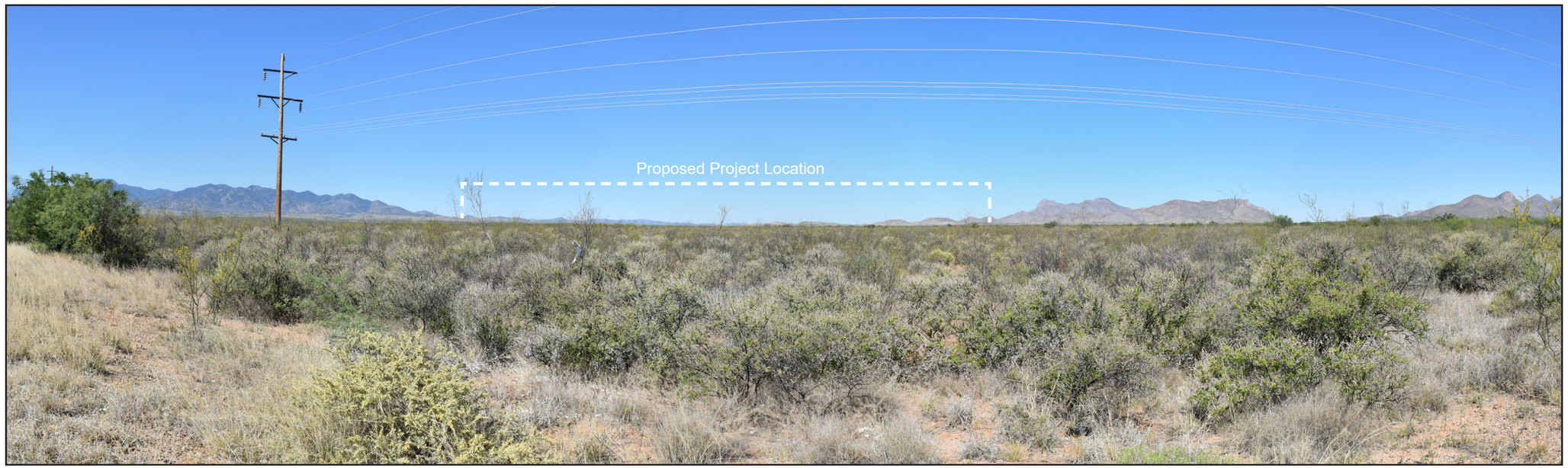
Tabloid Size Print, distance from face	7.33 inches

Simulation Created Using:
ArcGIS Pro; Adobe Photoshop;
Google EarthPro

Provided by
SWCA®
ENVIRONMENTAL CONSULTANTS



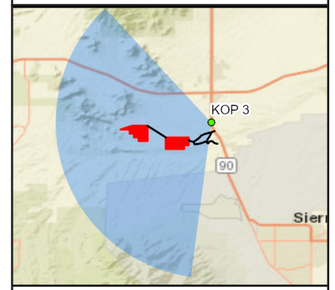
KOP 3 - Existing Condition: Arizona State Route 90, approx. 1/2-mile north of proposed access road, looking southwest



KOP 3 - Proposed Project: Arizona State Route 90, approx. 1/2-mile north of proposed access road, looking southwest

Babacomari Solar Project

KOP 3
Arizona State Route 90
approx. 1/2-mile north of access road



Base Photographic Documentation

Date	05/27/2020
Time (24H)	09:05
Longitude (°)	-110.350443
Lattitude (°)	31.664507
Viewpoint Elevation (ft)	4,392
Camera Height (m)	1.2
Camera Heading(deg.)	254

Camera Information

Camera Make & Model	Nikon D5600
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	AF-P Nikkor 18-55 mm
Lens Focal Legth	22mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	92 E
Sun Elevation (°)	47
Lighting Angle on Project	Side Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	83
Humidity (%)	10

Proposed Infrastructure Information

Closest Distance to Panels	1.6 miles

How to View at Real World Scale

Tabloid Size Print, distance from face	7.33 inches

Simulation Created Using:
ArcGIS Pro; Adobe Photoshop;
Google EarthPro

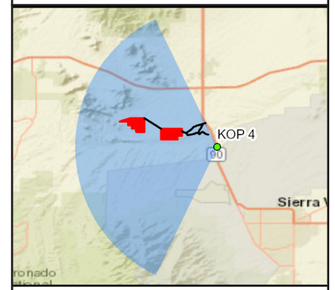
Provided by
SWCA®
ENVIRONMENTAL CONSULTANTS

KOP 4 - Existing Condition: Huachuca City municipal buildings, looking west

KOP 4 - Proposed Project: Huachuca City municipal buildings, looking west

Babacomari Solar Project

KOP 4
Huachuca City
municipal buildings



KOP
Access Road
Photo Angle
Project Area

Base Photographic Documentation

Date	05/27/2020
Time (24H)	08:40
Longitude (°)	-110.335397
Lattitude (°)	31.631852
Viewpoint Elevation (ft)	4,395
Camera Height (m)	1.2
Camera Heading(deg.)	270

Camera Information

Camera Make & Model	Nikon D5600
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	AF-P Nikkor 18-55 mm
Lens Focal Legth	22mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	87 E
Sun Elevation (°)	41
Lighting Angle on Project	Side Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	83
Humidity (%)	10

Proposed Infrastructure Information

Closest Distance to Panels	2.3 miles

How to View at Real World Scale

Tabloid Size Print, distance from face	7.33 inches

Simulation Created Using:
ArcGIS Pro; Adobe Photoshop;
Google EarthPro

Provided by
SWCA®
ENVIRONMENTAL CONSULTANTS

800 W Main St, Suite 900
Boise, ID 83702
208-639-3232

July 1, 2020

Dear Friends and Neighbors,

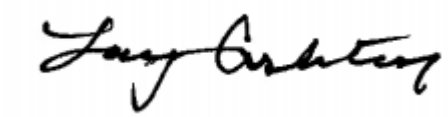
My name is Layne Ashton and I am a development manager for Babacomari Solar North LLC (Babacomari North) and Babacomari Solar South LLC (Babacomari South). Clēnera, LLC (Clēnera), the developer of the Babacomari solar facilities, is a privately held renewable energy company headquartered in Boise, Idaho. Combining breakthrough technology with a deeply integrated team approach, Clēnera provides reliable, affordable energy systems and helps its partners become clean energy leaders in their communities; which is what Clēnera aims to accomplish with Babacomari North and Babacomari South. Clēnera's current operating portfolio exceeds 1.3 GW, with more than 14 GW of solar and storage assets in development.

Babacomari North and Babacomari South will each be hybrid 80$MW_{(AC)}$ utility-scale solar facilities on private land owned by Babacomari Ranch Company. It is possible that an energy storage system (EES) will be installed at the Facility, which will increase total MW production. Both projects are west of Highway 90, with Babacomari North being approximately 3.5 miles west of Whetstone, and Babacomari South being approximately 1.8 miles west of Huachuca City (see map located on the attached flyer).

The county requires Babacomari North and Babacomari South to go through the zoning process of acquiring a special use authorization. Part of that process includes getting feedback from you, our neighbors. Clēnera is eager to hear from you with any positive feedback, concerns, questions, or objections that you might have concerning these projects. We are happy to address them, and your comments may be something that we have not thought of that may make the projects all the better. Clēnera will be accepting your comments via email or U.S. Postal Service mail until close of business, Friday, July 17, 2020. My email address is layne.ashton@clenera.com. Clēnera's mailing address is: Clēnera, PO Box 2576, Boise, ID 83701.

On behalf of Babacomari North, Babacomari South and Clēnera, thank you for your time and consideration. I look forward to hearing from you. You can learn more about Clēnera at www.clenera.com.

Sincerely and with best regards,



Layne Ashton
Development Manager

COCHISE COUNTY SOLAR POWER GENERATING FACILITIES

Babacomari Solar North &
Babacomari Solar South

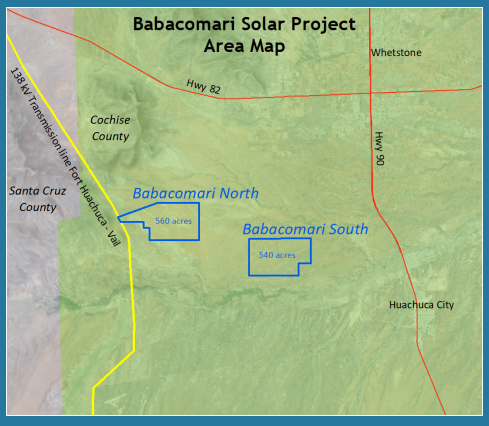
QUICK FACTS

Location:
Private Land in Cochise County, Arizona
North Project ~3.8 Miles SW of Whetstone
South Project ~1.8 Miles NW of Huachuca City

Project Size:
Each Facility: 80MW(AC)

Anticipated Completion:
Groundbreaking Q4 2020
Commercial Operations Q4 2021

Power Purchaser:
Tucson Electric Power (TEP)



Clēnera

PROJECT BENEFITS

- Clēnera is committed to being both a good neighbor and a good environmental steward in Cochise County
- Cochise County will receive $1,760,000 in tax revenue
- Approx. 350 construction jobs will be created at peak; many will be locals
- Approx. 54,400 Arizona homes will receive the electricity generated by the two facilities
- 750 million pounds of CO_2 emissions will be reduced each year
- The reduction in CO_2 is equivalent to avoiding approx. 38,000 gallons of gasoline consumption each year
- System equipment operates with indiscernible noise
- Area light pollution will not be contributed
- Water will not be required for operation

PROJECT OVERVIEW

Babacomari Solar North LLC and Babacomari Solar South LLC are two utility-scale solar power generating facilities to be constructed in Cochise County. Each facility will be situated on roughly 550 acres of private land leased from Babacomari Ranch Company.

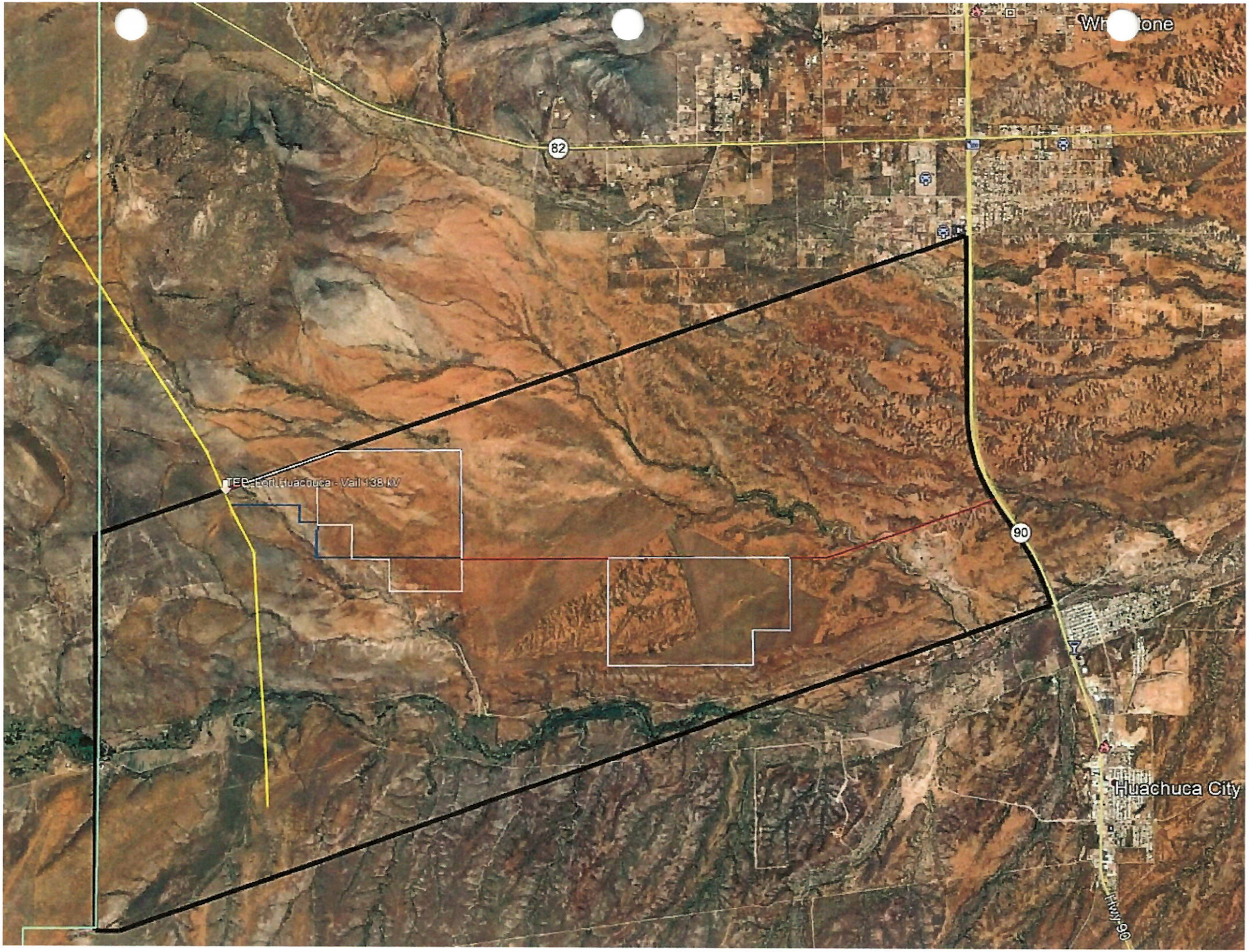
The Babacomari projects are located roughly one mile apart, to the SW and NW of Whetstone and Huachuca City, respectively. These projects will connect to TEP's transmission system.

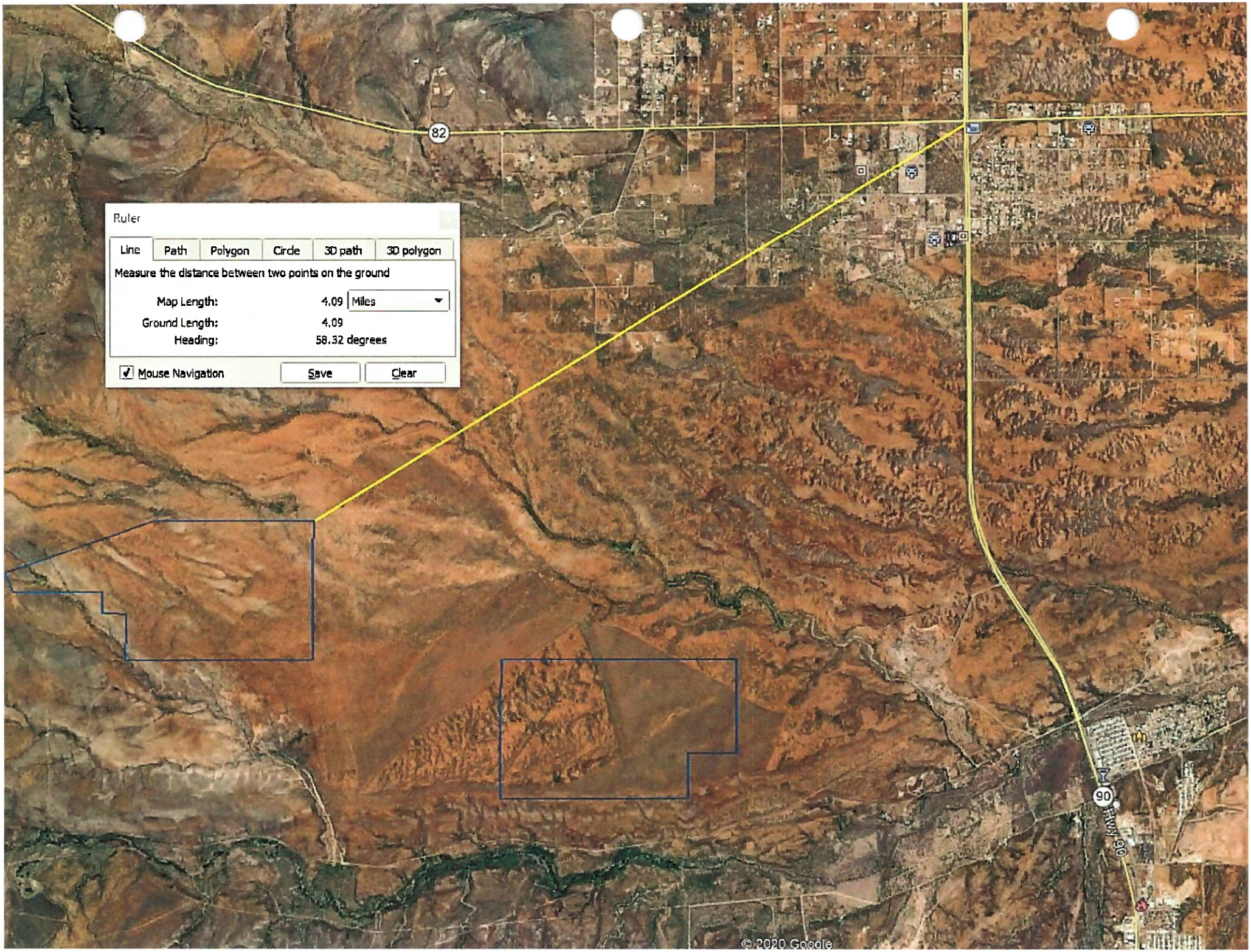
The facilities will operate on sunny days during daylight hours. It is not anticipated that there will be permanent personnel on-site post-construction.

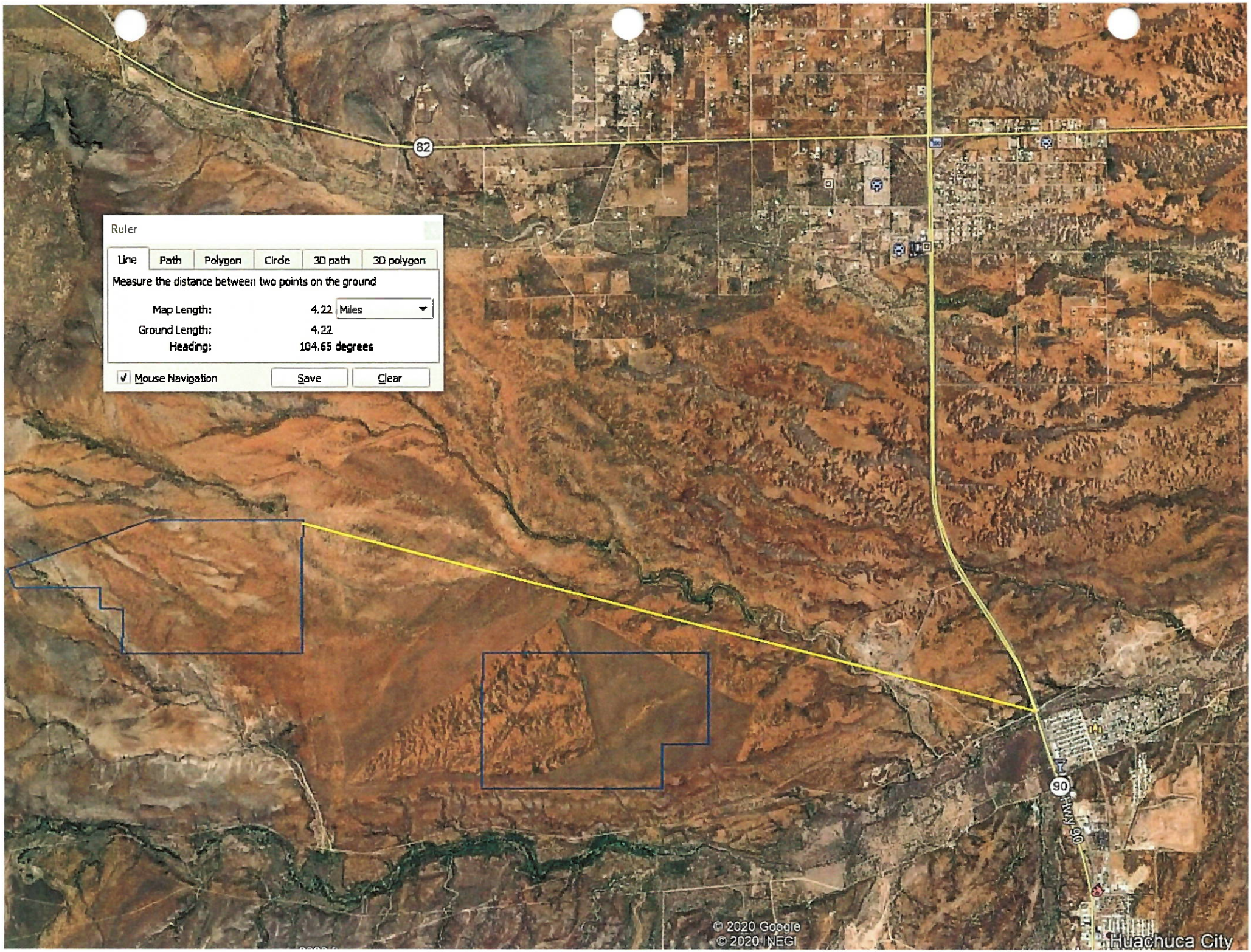
Notwithstanding, there will occasionally be personnel on site for maintenance, weed mitigation, etc. As such, following construction, traffic will mostly be limited to light vehicles (e.g. pick-up trucks) visiting the site for maintenance, etc.

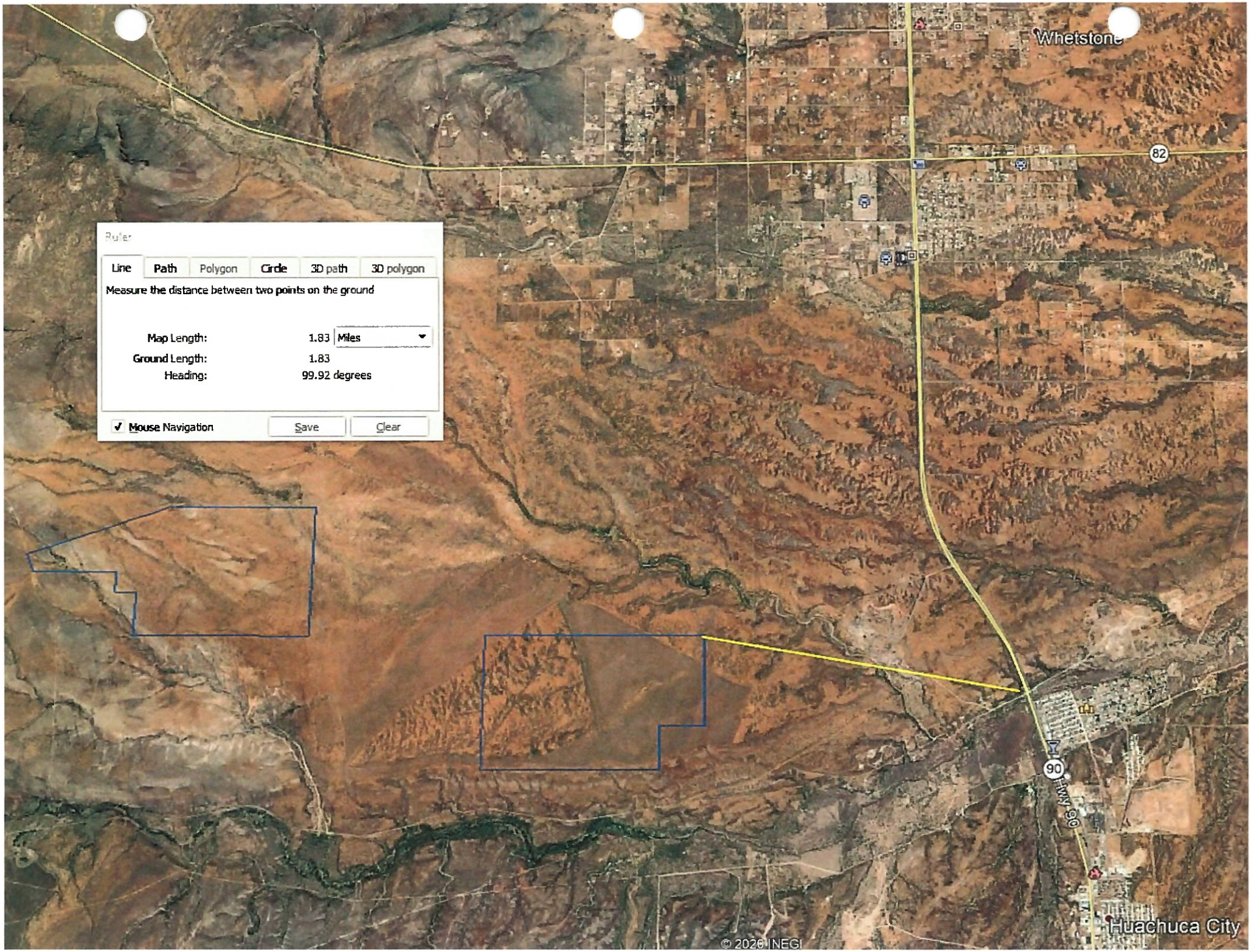
Clēnera, LLC (Clēnera), the developer of the Babacomari projects, is a privately held renewable energy company headquartered in Boise, Idaho. Combining breakthrough technology with a deeply integrated team approach, Clēnera provides reliable, affordable energy systems and helps its partners become clean energy leaders in their communities, which is what Clēnera aims to accomplish with Babacomari Solar North and Babacomari Solar South.

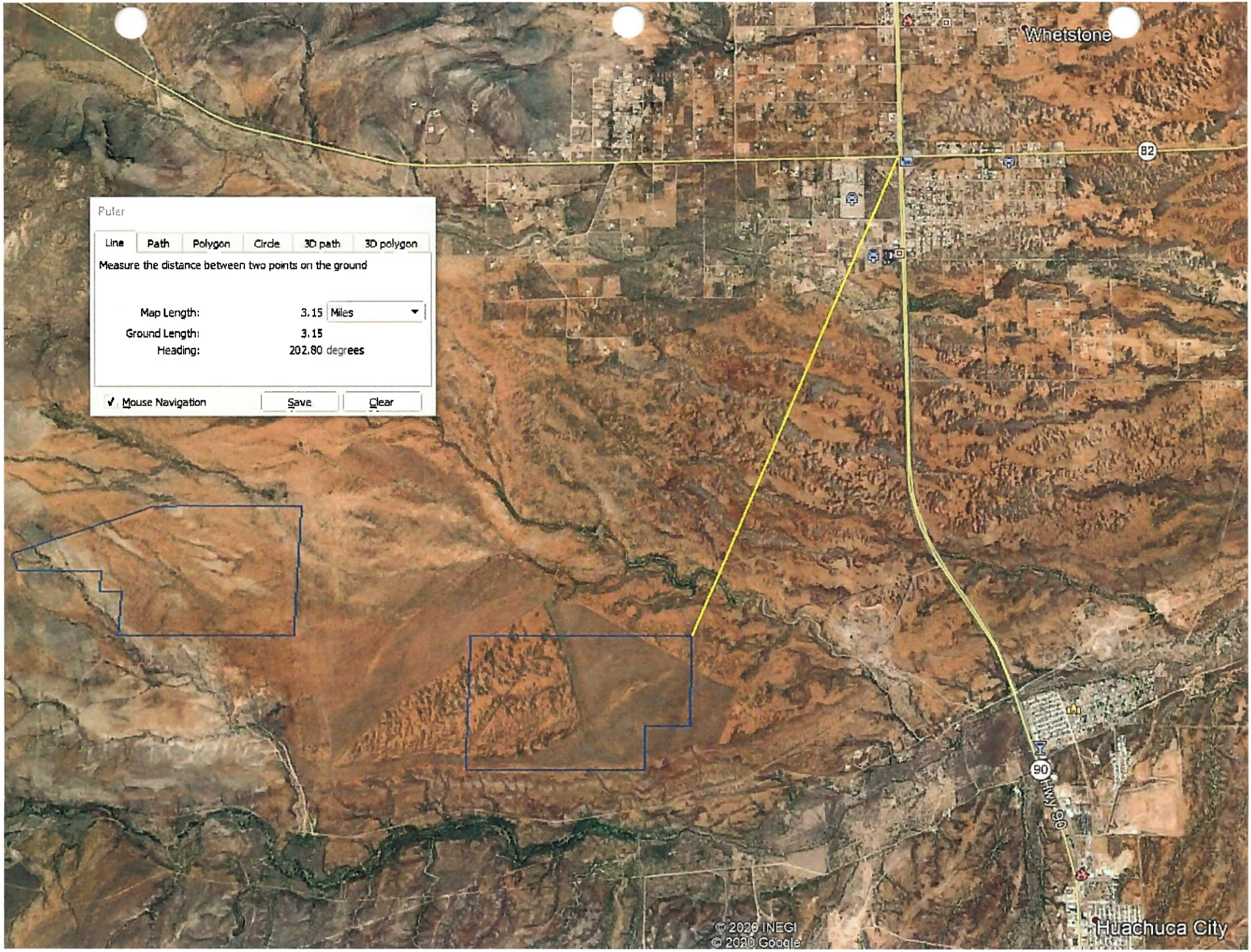
Learn more at www.clenera.com.


82
90
TEP - Fort Huachuca - Vail 138 kV
Huachuca City
HWY 90


Ruler
Line
Path
Polygon
Circle
3D path
3D polygon
Measure the distance between two points on the ground
Map Length: 4.09 Miles
Ground Length: 4.09
Heading: 58.32 degrees
Mouse Navigation
Save
Clear
82
90
HWY 90
© 2020 Google


Ruler
Line
Path
Polygon
Circle
3D path
3D polygon
Measure the distance between two points on the ground
Map Length:
4.22
Miles
Ground Length:
4.22
Heading:
104.65 degrees
Mouse Navigation
Save
Clear
82
90
Hwy 90
© 2020 Google
© 2020 INEGI
Huachuca City


Ruler
Line
Path
Polygon
Circle
3D path
3D polygon
Measure the distance between two points on the ground
Map Length:
1.83
Miles
Ground Length:
1.83
Heading:
99.92 degrees
Mouse Navigation
Save
Clear
Whetstone
82
90
HWY 90
Huachuca City
© 2020 INEGI



Ruler

Line | Path | Polygon | Circle | 3D path | 3D polygon

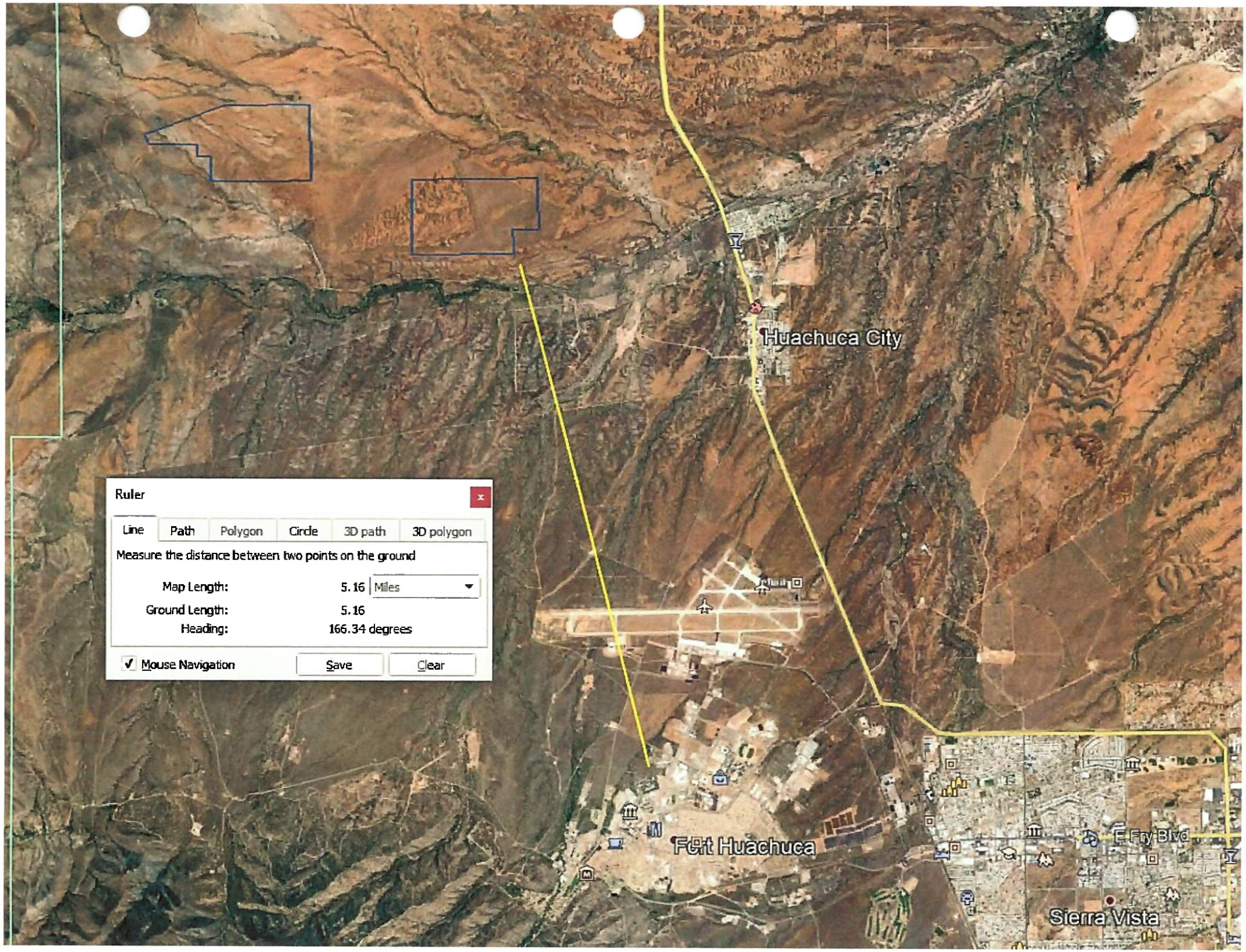
Measure the distance between two points on the ground

Map Length: 3.15 Miles

Ground Length: 3.15

Heading: 202.80 degrees

Mouse Navigation | Save | Clear


Ruler
Line
Path
Polygon
Circle
3D path
3D polygon
Measure the distance between two points on the ground
Map Length:
5.16
Miles
Ground Length:
5.16
Heading:
166.34 degrees
Mouse Navigation
Save
Clear
Huachuca City
Fort Huachuca
Fry Blvd
Sierra Vista

Babacomari Solar North LLC & Babacomari Solar South LLC

CITIZEN REVIEW PROCESS CORRESPONDENCE

Allen, Brooke
brookenallen143@gmail.com
July 23, 2020

Hi Layne,

I received your letter. My only concern is an increase in dust. Obviously this will be unavoidable during construction. However, once the site is fully built and functioning, what will you do to keep the dust levels down? The current vegetation does a decent job. The wind comes to us from that direction, so I'm sure you can understand the concern. Thanks for your time!

Brooke

Clēnera's Response
July 23, 2020

Good afternoon Ms. Allen -

Thank you for reaching out to me with your concern. As is mentioned in the flyer that accompanied my letter to you, Clēnera is committed to being both a good neighbor and a good environmental steward in Cochise County. In addressing dust, during construction a water truck will be used, which is a common practice. Another common practice is the use of an environmentally safe dust inhibitor. Post construction the soil over the entire area will be stabilized and the area will be revegetated using native seed varieties, limiting the dust to levels that you might see now.

Again, I sincerely appreciate your contacting me with your concern regarding this matter. Please reach out to me again should you have any further questions or concerns.

Sincerely and with best regards,

Avetian, Suzette
snooziesuzette@gmail.com
July 17, 2020

I received, just now, a letter from you (see attached), dated July 1, 2020, informing me of the proposed hybrid 80 MW (AC) utility scale- solar facility, with possible energy storage system installation. The letter also states that questions, concerns, comments will be entertained up to COB today. Fortunately, I received this letter today, just before COB.

My property abuts what I assume will be Babacomari South, so I have many concerns about this project. First and foremost is safety. Being that this will be a hybrid system, what will be the other power generating system? Will there be radiation generated? Noise levels? air quality? Also concerning me is the visual appearance. This will be a stark contrast to the natural landscape. Are you planning on putting up a wall? What type of wall? how high? Will there be any vegetation along the perimeter to hide the view?

I have included the other property owners on this conversation as well, as this will most likely have a detrimental financial impact on the value of the land.

Clēnera's Response
July 23, 2020

I appreciate your taking the time to contact me to share your questions and concerns with me.

The Babacomari solar projects are hybrid in the sense that, in addition to the photovoltaic (PV) modules that will capture the energy of the sun during daylight hours, the facilities are also designed to allow for an optional energy storage system (ESS). Think of the ESS as a battery or some other means of storage that will put power onto the grid when the PV modules are not generating electricity e.g., at night, cloudy days, etc. It is the addition of an EES system that makes Babacomari North and Babacomari South "hybrid" facilities. So, in response to your question, there is no other power generating source on site. In addition, no radiation will be generated. In fact, we anticipate that there will not be any off-site impacts as there will be no noise or odors, smoke, steam plumes, etc.

In terms of landscaping or walls, it is our estimation that the Babacomari projects will not require landscaping, walls or screening of any kind as the projects are shielded by significant natural barriers, the greatest of which is distance, topography and vegetation.

Finally, as is mentioned in the flyer that accompanied my letter to you, Clēnera is committed to being both a good neighbor and a good environmental steward in Cochise County.

Thanks again for reaching out to me with your questions.

Suzette Avetian
July 21, 2020

I have a few more questions generated with family discussions
1-What is the current zoning for the Babacomari Tract of Land?
2-Are there any plans to change that zoning? If so- to what?

-will those changes be permanent or temporary?
3-How long is the lease with Babacomari and Clēnera?

Clēnera's Response
July 23, 2020

Per Robert Kirschman, Cochise County Planner II, the current zoning of the parcel is High Industrial Use (HI) and Rural Use 4 (RU). The Cochise County Zoning Ordinance, Section 1824 states that "Solar Energy Power Plants are . . . allowed as a Permitted Use in LI and HI and may be permitted in RU and GB Zoning Districts by Special Use Authorization only." The land in question is currently zoned HI and RU, as such the proposed solar power generation facilities will be permitted when the special use permit is granted. Correction – the current zoning is RU4.

There will be no need to change zoning.

The lease is for 35 years.

Sincerely and with best regards,

Clay, Raymond
Hard-copy Letter
Received by Clēnera 07/14, 2020

JUL 1 / 2020

Clenera
Attn. Layne Ashton
P.O. Box 2576
Boise, ID. 83701

Dear Development Manager,

I am in receipt of your recent announcement of the solar project to take place in Cochise County , AZ. near Huachuca City / Whetstone area.

I own property approximately 1 + miles North of the intersection of Rt. 90 and Rt. 82.

I would deem my property as an ideal location for your development holding and receiving yard from which to facilitate your pending project. My property is on the access road of the 4 lane divided Rt 90 roadway . It has a steel structure of approximately 50 ft. X 100ft. under roof for shop purposes. . There is also a single family dwelling , a modular office and raised loading docks. The property consists of a ½ block with a 6 ft. chain link fence ,with gates, around the entire property facilitating security.
The property consists of 9 lots .
A plat map is enclosed for your consideration with contact information.
This property is not now listed with any broker .

Respectfully ,

Raymond Clay

Raymond Clay
9135 E. La Palma Dr.
Tucson, AZ 85747

520-574-2888

Clēnera's Response
July 17, 2020

Called and left message for Mr. Raymond, referring him to Mike Gallego, Clēnera's VP of Construction. Provided Mr. Gallego's phone number.

Domschot, Peg
pdomschot@yahoo.com
July 7, 2020

We received your letter/flyer regarding Babacomari North and Babcomari South.
As residents of Huachuca City, we're looking for more information.
Please define "hybrid 80MW utility-scale solar facilities".
Would also like to see a larger, more detailed map of facilities locations.

As a rule, we are glad to encourage solar energy and would be interested in learning more details than letter provides about these projects. We went to http://www.clenera.com but wonder how or where to obtain more specific information regarding the Babacomari North and South developments.

The Domschots
P.O. Box 4619
Huachuca City, AZ. 85616.
928-201-1311

Thank you.

Clēnera's Response
July 11, 2020

Dear Mrs. Domschot:

Babacomari North and Babacomari South are "hybrid" in the sense that in addition to the photovoltaic (PV) modules that will capture the energy of the sun during daylight hours, the facilities are also designed to allow for an optional energy storage system (ESS). Think of the ESS as a battery or some other means of storage that will store electricity from the facilities for distribution onto the grid when the PV modules are not generating electricity e.g., at night, cloudy days, etc. It is the addition of an EES system that makes Babacomari North and Babacomari South "hybrid" facilities.

In addition, several other neighbors have requested information that I will share with you as follows:

Please find attached four screenshot maps, with a ruler showing distance from: 1) Babacomari North to the Hwy 82 / Hwy 90 intersection; 2) Babacomari North to the Hwy 90 / West Railroad Drive at Huachuca City intersection; 3) Babacomari South Hwy 82 / Hwy 90 intersection; and, Babacomari South to the Hwy 90 / West Railroad Drive at Huachuca City intersection. I have not shared a live Google Map as Clēnera has other proprietary projects in the same file; thank you for understanding. Of note, an additional distance reference - the distance from the Babacomari South, north-west corner, straight across to Babacomari North is one mile.

In terms of the height of the panels, they track east/west to follow the sun during the day. At the resting, or horizontal position, and depending upon the panel used, you're looking at roughly 10' - 12' above grade, and for the short time that the sun is at its highest point in the sky, the panels are 100% vertical, and again, depending upon the panel used, from grade to tip of the panel will be no more than 15'. In terms of "tall" structures, there will be a short collection line for the one (1) mile distance

between Babacomari South and Babacomari North - pole height will be approx. 70' tall, with pole spacing at roughly 150'.

For your reference, I am also attaching four photos/visual simulations that have been prepared by a 3rd party contractor which illustrates: 1) an actual view looking towards the site from four key observation points (KOPs); and 2) a simulated view of what the view of the facilities will be from the same KOPs looking toward the two facilities. The four simulations illustrate the view as if the panels were fully vertical at 15', as well as the collection transmission line. However, you will notice that there is no difference between the actual photographs and the simulated photos because the Babacomari facilities will not be visible. This is due to natural buffers created by distance, topography and vegetation. Of note, KOP 3 references a "proposed access road." The road in question is on Highway 90, approximately 2.5 miles south of the Hwy 82 / Hwy 90 intersection. The proposed access road entrance is currently gated and there is an existing south-bound deceleration lane leading to the access road.

Pertaining to lighting at the facility, as these are operated remotely, they are primarily unmanned facilities, so it is expected that minimal lighting will be utilized. In addition, per Article 16, Light Pollution, Cochise County Zoning Ordinance, the facility will use shielded lighting and it is anticipated that low-pressure sodium lamps will be used. However, regardless of the lamps utilized, the Babacomari facilities will comply 100% with County ordinances leading to the protection of dark night skies from light pollution.

Please feel free to reach out to me at your convenience with any other questions you might have.

Thank you and best regards,

Engle, James
englejb@gmail.com
July 9, 2020

Hi Layne -
Thanks so much for sending the detailed location map. That is exactly what I was looking for. I have a few more questions - what do you expect the height of the solar panels to be above grade? Are there any "tall" structures involved? Is there any night time lighting at all?

Many thanks again for your time!

Clēnera's Response
July 10, 2020

Good morning Mr. Engle -

You're most welcome for the map.

In terms of the height of the panels, they track east/west to follow the sun during the day. At the resting, or horizontal position, and depending upon the panel used, you're looking at roughly 10' - 12' above grade, and for the short time that the sun is at its highest point in the sky, the panels are 100% vertical, and again, depending upon the panel used, from base to tip of the panel will be no more than 15'. In terms of "tall" structures, there will be a small collection line for the one (1) mile distance between Babacomari South and Babacomari North - pole height will be approx. 60' tall, with pole spacing at roughly 150'.

For your reference, I am attaching visual simulations that have been prepared by a 3rd party contractor which illustrates 1) an actual view looking towards the site; and 2) a simulated view of what the view of the facilities will be from that same observation point. The four simulations illustrate a worst case scenario of the panels being fully vertical at 15', as well as the collection transmission line. You will note from the four visual simulations that the Babacomari facilities will not be visible from said observation points.

Pertaining to lighting at the facility, as these are unmanned facilities it is expected that minimal lighting will be utilized. However, per Article 16, LIGHT POLLUTION of the County Zoning Ordinance, the facility will use shielded lighting. In addition, it is anticipated that low-pressure sodium lamps will be used. Between the shielded lighting and the lamp choice, the dark night skies will be protected from light pollution.

Please feel free to reach out to me with any other questions you might have.

Thank you and best regards,

Fero, Vincent
sgtfero@aol.com
July 8, 2020

I received the letter reference your solar project in Cochise County, AZ. I always support the use of renewable resources, especially solar as it has the least amount of impact on the lands.

I live 2 miles north of your project and the facility itself should not have an impact on me. My concern is what is not mentioned. Will the power generated be using the existing power distribution infrastructure?
My concern is the installation of overhead power poles to service the facility, which may impact properties. Also do you know if the power generated will benefit the residents of Cochise County and/or Fort Huachuca by providing power locally
or is it going to the big cities, such as Tucson, but using our neighborhood to generate it?

Thank You,

Vincent Fero

Clēnera's Response
July 8, 2020

Good Morning Mr. Fero -

I'm pleased to hear of your support of solar renewable energy, and I hope that you can support Clēnera's two Babacomari projects.

Concerning your first question, the point of interconnect (where the power will be put on the existing transmission line) is located on the Babacomari North site. Approximately one (1) mile of connection line will be constructed between the Babacomari South and Babacomari North facilities. Of note, the existing line that Babacomari North will interconnect with is the TEP Fort Huachuca/Vail 138kV transmission line.

In terms of your second question, the power generated by the two facilities will be sold directly to TEP, therefore, the power will go into TEP's system. That said, I would like to confirm that the power generated by the two Babacomari solar projects will stay exclusively in Cochise County, but I am unable to do so.

Please contact me with any further questions, comments or concerns that you may have.

Sincerely, and with best regards,

Hill, Bill
wachill@akatheart.net
July 12, 2020

Dear Layne Ashton – Thank you for your letter of July 1, 2020. We had not yet previously heard of your projects so close to our home (we live on the Babacomari, about a mile from Huachuca City). We have solar at our home and I was working for Fort Huachuca Public Works when we worked with Tucson to install the large field on the post. It is good to see more, larger solar fields being installed nearby.
I looked up your website and am even more impressed. Thanks for the notice.
Sincerely,
William A. (Bill) Hill, PE
PO Box 4595
Huachuca City, AZ 85616
(wachill@akatheart.net)

Clēnera's Response
July 12, 2020

Thank you for your support Bill!

Please let me know of you have any comments or questions going forward.

Sincerely and best regards,

Johnson, Sr., Frederic
fmjsr60@gmail.com
July 15, 2020

Mr. Ashton,

I received a letter requesting comment on the upcoming Babacomari solar projects. My comment concerns a suggestion that might increase the cost of the project, but would in my opinion, significantly improve its usefulness to the county.

A few years ago I had the pleasure of visiting the Ft Huachuca solar complex and saw something that I thought was pretty wasteful. The solar panels are all set at an angle and placed in a dirt field. My eye saw a great opportunity to improve water reclamation. By placing a concrete trench at the base of each set of solar panels, water runoff can be captured and channeled to a specific place and reclaimed, rather than just splashed onto the ground creating a huge muddy mess to the service roads between the panels, then running off to wherever it goes. With the number of panels that are proposed, the amount of water that could be captured in just one monsoon rain storm could be quite significant. Also, capturing and channeling massive amounts of rain water could quite possibly limit local flooding in certain areas by keeping excessive amounts of water out of our local waterways.

This type of reclamation project would of course have to be evaluated and professionally planned by appropriate engineers, but I believe the potential for huge amounts of water reclamation would make such a project worth a serious look. That would be an additional way to sell the project, or possibly future solar projects, to the public in general and municipalities in particular. Everybody in the desert needs water. Any way to capture rainwater, especially during our monsoon season should be given some serious consideration.

I hope you find my suggestion useful, if not for this particular project, maybe for one in the future.

Sincerely,

Frederick M. Johnson Sr.

Clēnera's Response
July 30, 2020

Dear Mr. Johnson,

Thank you for taking the time to share your suggestion/recommendation; as a layman, your recommendation is quite interesting, innovative and I view it as having a great deal of merit. I'm not an engineer myself, but I will forward your recommendation to Clēnera's Engineering Department. Notwithstanding, please be advised that I am aware that the engineering is already in full swing, and a budget is in place for the Babacomari projects, so based upon my knowledge of the project, it may not be feasible to incorporate your recommendation. Notwithstanding, if not the Babacomari projects, Clēnera has other projects in Arizona that are in various stages of greenfield development; perhaps the Engineering Department can incorporate the water capturing trenching for one of those. Regardless, I will reach out to Engineering tomorrow.

Do you by chance have any other recommendations, or do you have questions, comments or objections to share? If so, I'm happy to respond to those too.

Again, thank you for your time and efforts to reach out to me.

Sincerely and best regards,

15 July 2020

Clenera
PO Box 2576
Boise, ID 83701

Attention: Mr. Layne Ashton, Development Manager

cc: Cochise County Board of Supervisors: Districts 1, 2, and 3
Cochise County Planning and Zoning Commission

Re: Hybrid 80MW$_{(AC)}$ utility-scale solar facilities and energy storage systems on Babacomari North and Babacomari South

Mr. Ashton:

I am a native Arizonan (born and raised in Tucson). I have lived and worked in Cochise County since 1993. I own my home and reside in Whetstone.

I am responding to your letter dated 01 July 2020 inviting feedback, concerns, questions, or objections as part of the zoning process to acquire a special use authorization for constructing hybrid 80MW$_{(AC)}$ utility-scale solar facilities on private land owned by the Babacomari Ranch Company.

I object to and will oppose Clenera's project and the acquisition of a special use authorization to bring this project to completion.

My questions are numerous, and I thank you in advance for taking the time to answer them. I look forward to receiving the answers to the following questions:

1. Clenera's web site states, "Our love for the land and desire to create better systems and solutions for the environment is personal."

Q1: What "better systems and solutions" has Clenera created or want to create for the environment, and what problems are these systems and solutions solving?

Q2: Has Clenera conducted environmental impact studies for Babacomari North and South?

Q3: If yes to question Q2, are these studies available to the public and, if yes, where can the public get them?

Q4: How much land in Cochise County does Clenera want to lease/purchase for solar and/or wind farms?

Q5: How much land does Clenera want to lease/purchase in Arizona outside Cochise County for solar and/or wind farms?

Q6: What is the percentage of land in the United States needed to establish solar farms that will generate enough electricity to meet current and future demand currently provided by fossil fuels?

Q7: How do solar farms benefit the environment?

2. Clenera's web site states, "Our systems integrate the highest quality materials and products from around the world to create powerful new solutions."

Q1: Where do these "highest quality materials" come from?

Q2: Where are the solar panels that you will use for this project made?

Q3: Who makes the solar panels that you will use for this project?

Q4: What are the problems and what "powerful new solutions" is Clenera creating to solve these problems?

3. You web site states, "This is what a new era of clean energy looks like."

Q1: How does Clenera define "clean energy"?

Q2: What else, besides solar farms, does Clenera include in what "a new era of clean energy" looks like?

4. Your web site states, "And our decades of collective experience now make it possible for us to bring technology, solutions, and people together to redefine the way we access, use, and think about natural resources: one that doesn't come at a cost to people, the planet, or your business goals."

Q1: How do we currently define the access and use, and think about natural resources?

Q2: In the context of Clenera's statement, what comes at a cost to people, the planet, and business goals?

5. Your web site states Clenera currently "has prevented 6.5 billion pounds of CO_2 from being released into our atmosphere." Clenera's flyer states that a resulting benefit from this proposal is "750 million pounds of CO_2 emissions will be reduced each year."

Q1: Why does Clenera want to prevent CO_2 from being released into Earth's atmosphere, and why does Clenera want to reduce CO_2 in the atmosphere?

Q2: To what level—in parts per million—does Clenera want, via its current and future clean/renewable energy projects, to reduce CO_2 in the Earths' atmosphere?

6. Your web site states, "We're here to make solar not just a sustainable future, but a valuable one—one we all benefit from…"

Q1: What are the characteristics of a sustainable future?

Q2: How is it valuable?

Q3: How will all life on Earth benefit from a sustainable and valuable future?

7. Your letter states, "Clenera … helps its partners become clean energy leaders in their communities, which is what Clenera aims to accomplish with Babacomari North and South."

Q1: Who does "partners" refer to?

Q2: What is Clenera's definition of "clean energy leaders" and what are they to do and achieve?

Q3. What specifically will Clenera do to accomplish this aim?

Q4. How will Clenera accomplish this aim?

8. After the project is completed, who will own Babacomari Solar North LLC and Babacomari Solar South LLC?

9. Has Clenera already signed a lease agreement with the Babacomari Ranch Company?

10. What are the terms of the lease agreement between Clenera LLC, Babacomari Solar North LLC, and Babacomari Solar South LLC and the Babacomari Ranch Company?

11. Regarding the lease agreement between Clenera and the Babacomari Ranch Company:
    Q1: What is Clenera's duration of the lease for each site?
    Q2: Does Clenera have an option to renew the lease and for how long?

12. Does Clenera LLC, Babacomari Solar North LLC, and/or Babacomari Solar South LLC have the option to purchase this land from the Babacomari Ranch Company?

13. If yes to question 12, when?

14. Does Clenera want to lease and/or purchase additional land from the Babacomari Ranch Company in Cochise County?

15. If yes to question 14, where is this land located, what is the size of this land, and for what purposes?

16. What other land in Cochise County and in Arizona does Clenera want to lease and/or purchase for solar and/or wind farms?

17. Regarding question 16, where is this land, what is the size of the land, and for what purposes?

18. What specific Clenera and TEP components and how many each will make up the hybrid $80MW_{(AC)}$ utility scale solar facilities on Babacomari North and South (e.g., solar panels, wind turbines, energy storage units, TEP substations, switchyard(s), transmission line(s), etc.) currently proposed and in the future?

19. The Project Overview in the flyer states the Babacomari Solar North and South "will connect to TEP's transmission system." How will Clenera and/or TEP connect these two projects to TEP's transmission system?

20. Will Clenera place only solar panels on these two sites?

21. How large is each proposed solar panel for each site?

22. How many solar panels will be placed on each site?

23. Will Clenera use mirrors to concentrate sunlight on these two sites?

24. If yes to question 23, how large are the mirrors, how many will be used, and where will they be placed?

25. How many acres of solar panels will be located on Babacomari North and South each?

26. Will Clenera expand the size of the solar farms on Babacomari North and South from the initial project, and if yes, when?

27. Will Clenera build wind turbines on Babacomari North and South as part of the proposed project and/or in the future?

28. If yes to question 27:
    Q1. How many wind turbines on each site?
    Q2: Where will the turbines be situated?
    Q3: What direction will the front of the turbines face?
    Q4: How tall are the wind turbines?
    Q5: What type of blades will be used?
    Q6: Who manufactures the wind turbines?
    Q7: How many blades per turbine?
    Q8: What is the length of each blade.
    Q9: What will prevent the wind turbines from striking birds, bats, and insects?
    Q10: Will Clenera expand the number of initial wind turbines at these two sites in the future? If yes, to how many?

29. Where will Clenera dispose of solar panels from these two sites?

30. Where will Clenera dispose of wind turbine components?

31. Did Clenera receive venture capital? If yes, from whom?

32. Does Clenera LLC, Babacomari Solar North LLC, and/or Babacomari Solar South LLC each have a Board of Directors or management board?

33. If yes to question 32, who is on the board(s), to include company and organization affiliation?

34. What organizations in the field of green/clean energy, solar energy, wind energy, and/or renewable resources is Clenera affiliated with?

35. Please provide a list of the names and titles of government officials in Arizona and Washington DC, to include city, county, and state representatives, and government agencies Clenera contacted to elicit support for this project?

36. Has any local or state government official, representative, and/or agency in Arizona or Washington DC expressed support for this project?

37. If yes to question 36, who and what agency?

38. Does Clenera LLC, Babacomari Solar North LLC, and/or Babacomari Solar South LLC currently have any verbal and/or written agreements, contracts, and Memorandum(s) of Agreement/Understanding with government officials and/or government agencies in Arizona or Washington DC?

39. If yes to question 38, what are they and with whom, to include titles and names of agencies?

40. Who are the individuals and organizations Clenera will enlist to provide letters of support and/or speak in support of this project on behalf of Clenera?

41. Has Clenera made any contributions, to include but not limited to, political committees, PACs, Super PACs, and/or Separate Segregated Fund since its inception?

42. If yes to question 41, which ones, to whom, for how much, and for what specific purposes?

43. What company will manage Babacomari Solar North and South after completion?

44. The flyer states "approximately "54,400 homes" will receive the electricity generated by the two facilities.

Q1: Where are these "54,400 Arizona homes" located?

Q2: Is electricity generated by these two facilities also going elsewhere? If yes, where?

45. What is the agreement between Clenera and TEP?

46. Does Clenera support the Democrat Party's Green New Deal?

Respectfully,

Maureen G. McBride

Maureen G. McBride
P.O. Box 4937
Huachuca City, AZ 85616
mgmcbride43@gmail.com

NOTE: *Ms. McBride's letter was extremely well written, detailed, and thought provoking. Due to the broad spectrum of questions, many of them not necessarily applicable to the Babacomari North and Babacomari South projects, and/or sensitive in nature, Ms. McBride's letter was reviewed by multiple department SMEs within the Clēnera organization, including Construction, Development, Corporate Communications, Legal and Clēnera's executive management. Hence, Clēnera's response was given extensive time and consideration. Those questions that Clēnera's SMEs and Legal Department considered to be outside the scope of the two Babacomari Projects, and/or that the company views as being sensitive to Clēnera's operations, did not receive a response.*

Clēnera's Response
September 2, 2020

Sent Via Email
Maureen McBride
mgmcbride43@gmail.com

Dear Ms. McBride:

Thank you for taking the time to learn more about Clēnera and ask your thoughtful questions.

In response to your questions regarding our partners, Clēnera's technology partners are located all around the world. We select partners who invest in high quality materials and continuous product innovation. Clēnera's partners include utility companies, technologists, landowners, and even communities. You may visit the *Approach* page on our website (www.clenera.com/approach) to view a list of some of Clēnera's current and past utility and technology partners.

A new era of clean energy is one in which renewable energy is the clear choice. Since Clēnera exclusively develops large-scale solar projects, a new era of clean energy is one where solar farms exist within the communities that ourselves, partners, and the future generations live in while we continue to be good stewards of the land. A new era of clean energy involves all of us working together to make solar and energy storage a valuable and sustainable future that we can all benefit from.

Please see below for Clēnera's responses to your questions regarding the Babacomari Solar North and Babacomari Solar South projects.

1. Where are the solar panels that you will use for this project made? Who makes these solar panels?
   At this time, Clēnera has not selected a module supplier for the Babacomari projects.
2. Has Clēnera conducted environmental impact studies for Babacomari North and South?
   An environmental impact study is not required for this project.
3. What specific Clēnera and TEP components and how many of each will make up the hybrid 80 MWac utility-scale solar facilities on Babacomari North and South (e.g. solar panels, wind turbines, energy storage units, TEP substations, switchyard(s), transmission line(s), etc.)?
   It is estimated that each 80 MW facility will have 216,000 PV modules. The two facilities are reserving the right to install energy storage systems (ESS) units, however, the number of units has not been determined by Clēnera's engineering team. One switchyard will be constructed by TEP on the Babacomari Solar North facility, which will also serve Babacomari Solar South. The Babacomari switchyard is the interconnect point with the TEP transmission line. In addition,

Babacomari will construct a one-mile connection line for the power generated by Babacomari Solar South to be transmitted to the switchyard. This line could be overhead or underground.

4. The Project Overview in the flyer states the Babacomari Solar North and South "will connect to TEP's transmission system." How will Clēnera and/or TEP connect these two projects to TEP's transmission system?
   The projects will be connected via the switchyard at Babacomari Solar North.
5. Will Clēnera place only solar panels on these two sites?
   Clēnera exclusively develops large-scale solar projects. Babacomari Solar North and Babacomari Solar South will not pursue any other use other than activities associated with the generation of solar power on the leased project sites. Babacomari Solar North and South are "hybrid" facilities, so they will have both photovoltaic (PV) modules and an energy storage system (ESS).
6. How large is each proposed solar panel for each site?
   Sizing of solar panels varies by module manufacturer, and because module technology changes so quickly, it is difficult to say what the exact size of these photovoltaic (PV) modules will be. PV panels can range from 3 to 4 feet wide by 6 to 8 feet long.
7. How many solar panels will be placed on each site?
   Approximately 216,000 per facility.
8. Will Clēnera use mirrors to concentrate sunlight on these two sites?
   Mirrors will not be used for Babacomari Solar North and Babacomari Solar South.
9. How many acres of solar panels will be located on Babacomari North and South each?
   This is to be determined. However, the Babacomari Solar North site is approximately 560 acres and Babacomari Solar South is approximately 540 acres, each with approximately 216,000 PV modules.
10. Will Clēnera expand the size of the solar farms on Babacomari North and South from the initial project, and if yes, when?
    At this time, there is no expectation that the facilities will be expanded.
11. Will Clēnera build wind turbines on Babacomari North and South as part of the proposed project and/or in the future?
    Clēnera is exclusively a large-scale solar developer, therefore, wind turbines are not part of the Babacomari Solar North and Babacomari Solar South projects.
12. Where will Clēnera dispose of solar panels from these two sites?
    The intended useful life of the project is 35 years. At the end of the life of the project, the solar facilities will be removed, and the modules will be repurposed, salvaged/recycled in then-current acceptable manner, or disposed of in accordance with county, state, and federal requirements. The site and the area will then be stabilized and reseeded with native seed varieties, restoring the site back to its original state.
13. Where will Clēnera dispose of wind turbine components?
    N/A
14. The flyer states "approximately 54,400 homes will receive the electricity generated by the two facilities."
    a. Where are these 54,400 Arizona homes located?
       This is to be determined by TEP.
    b. Is electricity generated by these two facilities also going elsewhere? If yes, where?
       The clean energy that will be generated by Babacomari Solar North and Babacomari Solar South will only be used by TEP's customers, since the existing transmission line is owned by TEP, which takes ownership of all the power generated by the two Babacomari facilities at the point of interconnect (where Clēnera ties into TEP's transmission line,

which is on Clēnera's site). There are no plans to sell power to other providers as Clēnera will be under contract with TEP.

15. After the project is completed, who will own Babacomari Solar North LLC and Babacomari Solar South LLC?
    This is to be determined.
16. Has Clēnera already signed a lease agreement with the Babacomari Ranch Company?
    Yes, the lease has been signed.
17. What are the terms of the lease agreement between Clēnera LLC, Babacomari Solar North LLC, and Babacomari Solar South LLC, and the Babacomari Ranch Company?
    A memorandum of the leases will be recorded in the public record.
18. Regarding the lease agreement between Clēnera and the Babacomari Ranch Company:
    a. What is Clēnera's duration of the lease for each site?
       The length of the lease is 20 years.
    b. Does Clēnera have an option to renew the lease and for how long?
       Yes, there is the option to renew the lease for three, five-year extensions.
19. Does Clēnera LLC, Babacomari Solar North LLC, and/or Babacomari Solar South LLC have the option to purchase this land from the Babacomari Ranch Company?
    No, there is not an option to purchase this land.
20. Did Clēnera receive venture capital? If yes, from whom?
    This is confidential information.
21. Does Clēnera LLC, Babacomari Solar North LLC, and/or Babacomari Solar South LLC each have a Board of Directors or management board?
    This is confidential information.
22. Please provide a list of names and titles of government officials in Arizona and Washington DC, to include city, county, and state representatives, and government agencies Clēnera contacted to elicit support for this project.
    This is confidential information.
23. Has any local or state government official, representative, and/or agency in Arizona or Washington DC expressed support for this project?
    This is confidential information.
24. Does Clēnera LLC, Babacomari Solar North LLC, and/or Babacomari Solar South LLC currently have any verbal and/or written agreements, contracts, and Memorandum(s) of Agreement/Understanding with government officials and/or government agencies in Arizona or Washington DC?
    This is confidential information.
25. Who are the individuals and organizations Clēnera will enlist to provide letters of support and/or speak in support of this project on behalf of Clēnera?
    This is confidential information.
26. What company will manage Babacomari Solar North and South after completion?
    This is to be determined.
27. What is the agreement between Clēnera and TEP?
    It is a Power Purchase Agreement.

We appreciate and understand your concerns. Being good stewards of the land means that we must pursue technology and partners that allow us to perform in this way. We are confident that we will be a good environmental neighbor in Cochise County.

Sincerely and with best regards,

Meigs, Monty
montymeigs7@yahoo.com
July 20, 2020

Hello layne, I would like to get some information from you concerning the Babacomari project. I own property (approx. 700 acres) which borders the Babacomari ranch On one side and Fort Huachuca on the other. I am concerned how this project will effect my property. I would also like to know if your company would be interested in buying or leasing my land.
Please give me a call at (916) 365-3745
Thank you, Monty Meigs

Mr. Meigs phone call was returned by Layne Ashton. Mr. Meigs said that a portion of his land is on a hill/bluff that overlooks the Babacomari B project site, which he is concerned may impact the value of his property. Mr. Meigs wants Clēnera to buy his land. On July 30th, Mr. Meigs provided pictures looking from his property on the bluff towards the Babacomari Projects.

Clēnera's Response
July 30, 2020

Good afternoon Monty, thank you for taking the time to speak with me on the phone. I also thank you for the photographs - they are helpful.

I'm not sure where your property lies between Ft. Huachuca and the Babacomari North and Babacomari South sites, but I'm attaching maps that show exactly where the projects are located - it would be helpful if you would circle your land on the Aerial View of the Babacomari locations, then take a picture or scan to send to me - that will really be helpful. Of note, the heavy black, rectangular outline is the Babacomari Ranch Co. parcel; Clēnera is leasing the two sites outlined in white for the projects - the Babacomari North site is 560 acres, while the Babacomari South site is 540 acres.

As I understand it, your concern is that the construction of the Babacomari solar facilities may impact the value of your land, and I acknowledge that this is a valid concern. Based upon our previous conversation, you are interested in selling your land to Clēnera, which would resolve your concern. As I mentioned, Clēnera's need and/or interest in purchasing your land is not within my bailiwick, but Aaron Mendon hall, one of Clēnera's land managers, will be contacting you to discuss the matter.

As before, thank you for reaching out to me with your concern: it is important for Clēneras to understand it in order to be the good neighbor we promise to be.

Please do not hesitate to reach out to me with any additional comments or questions you might have.

Sincerely and with best regards,

Aaron Mendenhall did speak with Mr. Meigs and explained that Clēnera does not purchase or lease land unless the specific land can be developed as a solar project, which would not be the case with Mr. Meigs ~700 acres. Mr. Mendenhall said that Mr. Meigs expressed disappointment that Clēnera won't buy his land, but Mr. Meigs hasn't communicated with Clenera since that time.

Mountjoy, Rena
rena.mtjoy@gmail.com
July 16, 2020

As I and my family own several homes next to the fence line of the Babacomari Ranch, we are concerned about the height of the solar panels on the Babacomari South.
We would hope that they not be too high that would obstruct are West view of the mountain and sunset
Rena Mountjoy
Mountjoy Living Trust.

Clēnera's Response
July 23, 2020

Thank you for reaching out with your question and concern regarding the height of the solar panels at the Babacomari solar site. I certainly understand your concern and your desire to maintain your beautiful views of the mountains and sunsets. Responding to your question, the photovoltaic modules track the sun during daylight hours. The panels from grade are approximately 15 feet, and that is only when the sun is at its peak in the sky and the PV modules are 100% vertical for the few minutes that the sun is at its high point. At full horizontal rest in the evening and night, the module height will be roughly 10 - 12 feet from grade. The facility will not interrupt your view for three primary reasons: distance (approx. 1 mile from Babacomari South - see map); topography and vegetation.

Again, thank you for reaching out to share your concern with Clēnera. As is mentioned on the flyer I sent along with the letter you received, Clēnera is committed to being both a good neighbor and a good environmental steward in Cochise County. On behalf of Clēnera, Babacomari Solar North LLC and Babacomari Solar South LLC, I look forward to being your neighbor.

Sincerely and with best regards,

Mountjoy, Rena

July 23, 2020

Thank you for getting back to me on that.

Also, would you have any positions open for employment, since we will be neighbors? 

Clēnera's Response
July 28, 2020

Good evening Ms. Mountjoy -

At this time, Clēnera has several open positions in our corporate office in Boise, and those positions can be viewed at: https://www.clenera.com/careers. If the currently listed positions are not of interest to you, then please check back often as Clēnera is a growing company and it is not uncommon to find new

jobs posted quite often. In terms of positions in the Huachuca City area, Clēnera will hire a third-party contractor to construct the facility - it is anticipated that the contractor will hire local people for some of the craftspeople positions during construction, but I simply can't speak to that with 100% certainty. However, I can say that there will be roughly 350 contractor employees on site during the peak of construction. In terms of full-time employment post-construction, owing to the facilities being monitored and operated remotely, there may only be 1 or 2 permanent maintenance positions created. I would anticipate that those positions will be filled towards the end of the construction process - they may also be listed on the Clēnera careers portal.

Finally, I will tell you that Clēnera is an amazing company with exceptional and honest leadership, and a positive, professional, and family friendly culture. I've been with Clēnera for a year, and it just keeps getting better.

I hope you find this information to be helpful.

Sincerely and with best regards,

Larry Portouw & Cunningham, Debbie
larry@portouw.com
dcdcunningham11@gmail.com
July7, 2020

Dear Mr/Ms Ashton,
I am in receipt of your letter and brochure dated July 1st about the Cochise County solar project in the Babacomari. I am heartened to see that an Arizona solar project will support the power needs of the Arizona, although it doesn't directly support the energy needs of the community.
I'm a writing to request a more legible map of the projects boundaries, and to point you to any of the readily available capabilities of mapping and imagery services and applications on the web- Google Earth for example. The map supplied in your brochure is unacceptable. I had to use a magnifying glass to read some of the annotations, and it is sorely lacking in detail. I am a Whetstone resident west of Hwy 90 and south of Hwy 82 and cannot accurately place our neighborhood let alone my property on the 2"x2" graphic you supplied. An electronic (email graphic, .ntf, .kmz or similar, or URL) response is preferred.

Sincerely,
Lawrence J. Portouw
Colonel (USA Retired)

Debbie Cunningham
July 8, 2020

As President of the Chula Vista HOA I would also like you to send this information to me. I have very concerned homeowners. What is the height of the solar array?

Thanks,
Debbie Cunningham
CVHOA President

Clēnera's Response
July 10, 2020

Good Afternoon Neighbors!

Please find attached four screenshot maps, with a ruler showing distance from: 1) Babacomari North to the Hwy 82 / Hwy 90 intersection; 2) Babacomari North to the Hwy 90 / West Railroad Drive at Huachuca City intersection; 3) Babacomari South Hwy 82 / Hwy 90 intersection; and, Babacomari South to the Hwy 90 / West Railroad Drive at Huachuca City intersection. I have not shared a live Google Map as Clēnera has other proprietary projects in the same file; thank you for understanding. Of note, an additional distance reference - the distance from the Babacomari South, north-west corner, straight across to Babacomari North is one mile.

In terms of the height of the panels, they track east/west to follow the sun during the day. At the resting, or horizontal position, and depending upon the panel used, you're looking at roughly 10' - 12' above grade, and for the short time that the sun is at its highest point in the sky, the panels are 100% vertical, and again, depending upon the panel used, from grade to tip of the panel will be no more than 15'. In terms of "tall" structures, there will be a short collection line for the one (1) mile distance

between Babacomari South and Babacomari North - pole height will be approx. 70' tall, with pole spacing at roughly 150'.

For your reference, I am attaching four photos/visual simulations that have been prepared by a 3rd party contractor which illustrates: 1) an actual view looking towards the site from four key observation points (KOPs); and 2) a simulated view of what the view of the facilities will be from the same KOPs looking toward the two facilities. The four simulations illustrate the view as if the panels were fully vertical at 15', as well as the collection transmission line. However, you will notice that there is no difference between the actual photographs and the simulated photos because the Babacomari facilities will not be visible. This is due to natural buffers created by distance, topography and vegetation. Of note, KOP 3 references a "proposed access road." The road in question is on Highway 90, approximately 2.5 miles south of the Hwy 82 / Hwy 90 intersection. The proposed access road entrance is currently gated and there is an existing south-bound deceleration lane leading to the access road.

Pertaining to lighting at the facility, as these are operated remotely, they are primarily unmanned facilities, so it is expected that minimal lighting will be utilized. In addition, per Article 16, Light Pollution, Cochise County Zoning Ordinance, the facility will use shielded lighting and it is anticipated that low-pressure sodium lamps will be used. However, regardless of the lamps utilized, the Babacomari facilities will comply 100% with County ordinances leading to the protection of dark night skies from light pollution.

Please feel free to reach out to me at your convenience with any other questions you might have.

Thank you and best regards,

Cunningham, Debbie
July 10, 2020

Thank you so much for all this information

Clēnera's Response
July 11, 2020

Mrs. Cunningham -

You're most welcome. As before, please feel free to reach out with any additional comments or questions you might have.

Sincerely and with best regards,

Ramirez, Gene
g.ramirez@borderland-inc.com
July 13, 2020

Layne,
I was informed of a couple large solar projects that were potentially going to start in the near future on the Babacomari Ranch. Our construction firm is located in Tucson Arizona and would like the opportunity to look at all of your clearing and grading work. Our firm is the largest grading contractor in southern az with the capabilities of performing wet and dry utility work, concrete structures, grading, paving. I believe we would be an asset to your team.

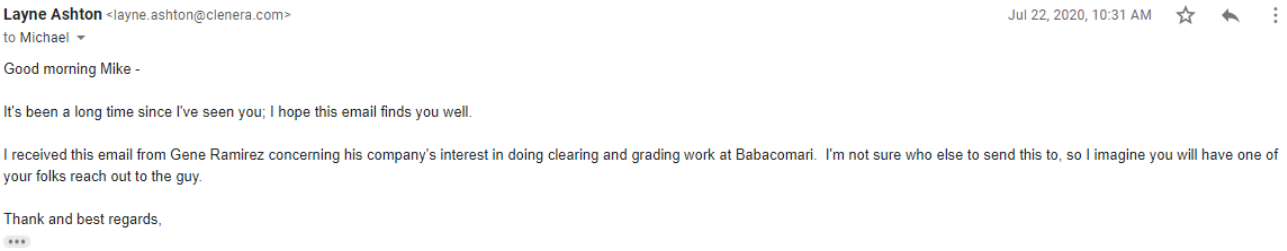
Please advise me of what we would need to do to bid your work.

If you have any questions, please do not hesitate to contact me (520) 904-2469.

Respectfully,

Gene Ramirez

Clēnera's Response
July 22, 2020



Layne Ashton <layne.ashton@clenera.com> Jul 22, 2020, 10:31 AM
to Michael

Good morning Mike -

It's been a long time since I've seen you; I hope this email finds you well.

I received this email from Gene Ramirez concerning his company's interest in doing clearing and grading work at Babacomari. I'm not sure who else to send this to, so I imagine you will have one of your folks reach out to the guy.

Thank and best regards,

Thanks for reaching out Gene. You will see that I have forwarded your email to Mike Gallego, Clēnera's VP of Construction. Mike is your best contact. Should you want to reach out to him directly, please call our office at (208) 639-3232.

Thanks, and best regards,

Richardson, Rob
info@richardsonmotorscompany.com
July 17, 2020

LAYNE,
I JUST FOUND OUT ABOUT THE PROJECT TODAY. I HAVE BEEN OUT OF TOWN RUNNING OUR FAMILY BUSINESS DUE TO A FAMILY MEMBER BEING OUT WITH THE CORONA VIRUS. I AM VERY CONCERNED ABOUT THIS PROJECT BEING BUILT IN ITS CURRENT PROPOSED LOCATION. I OWN PROPERTY THAT BACKS UP TO THE BABACAMARI RIVER AND I DO NOT WANT MY VIEWS OBSTRUCTED OR MY PROPERTY VALUE AFFECTED.

SO HERE ARE A LIST OF MY QUESTIONS:

1. WHAT HAS THIS DONE TO THE PROPERTY VALUE OF PRIVATELY OWNED LAND ON OTHER PROJECTS LIKE THIS ONE, AFTER COMPLETION? HAS IT DEVALUED PRIVATE PROPERTY?
2. WHEN THEY HOOK INTO TEP FOR TRANSMISSION, IS IT OVERHEAD POWER LINES OR IS IT BURIED? WILL THEY BE OBSTRUCTING ANY VIEWS FROM OUR PROPERTY?
3. WHAT DOES THE ENERGY STORAGE SYSTEM/PLANTS LOOK LIKE? ARE THESE GENERATING POWER PLANTS GOING TO BE ONLY THE SOLAR PANELS? OR IS IT GOING TO BE LARGE/TALL POLES AND THOSE ENERGY CABLES UP OVERHEAD? IS IT GOING TO OBSTRUCT OUR VIEWS OF THE MOUNTAINS?
4. WHAT IS THE PROCEDURE IF WE DISAGREE WITH THIS PLAN? CAN WE FIGHT IT? WHY WERE WE NOT NOTIFIED PRIOR TO THE APPROVAL OF THE PROJECT? WHY DID THEY NOTIFY US AFTER THE PROJECT HAD ALREADY BEEN APPROVED? WERE PROPERTY OWNERS GIVEN THE OPPORTUNITY TO VOTE ON THIS PLAN?
5. THERE HAD TO BE SOME KIND OF PROCESS IN ORDER TO APPROVE THIS LOCATION AND I AM VERY CONCERNED THAT THE PROPERTY OWNERS WERE NOT NOTIFIED. ESPECIALLY THOSE OF US THAT BACK RIGHT UP TO THE RIVER AND ONE OF THE FACILITIES WILL BE JUST TO THE SOUTH OF ME AND THE OTHER FACILITY WILL BE TO THE SOUTHWEST OF MY PROPERTY.

I WOULD LIKE ANSWERS TO ALL OF MY QUESTIONS AS SOON AS POSSIBLE. I AM VERY CONCERNED ABOUT THIS PROJECT BUTTING UP TO MY PROPERTY.

YOU CAN REACH US AT HAPPYINKEMPNER@YAHOO.COM OR TWOSTEELERFANS@COX.NET. YOU CAN ALSO REACH US AT 1-254-319-0823 (RANDALL) OR 1-702-580-1934 (ROSLYN).

RANDALL RICHARDSON
ROSLYN SEDAM

Clēnera's Response
July 20, 2020

Good afternoon Mr. Richardson -

First, I hope all is well with your family now, and that you and yours are happy and healthy. Secondly, I'm attaching an aerial map of the project location; the white outlines are the proposed Babacomari North and Babacomari South project areas that we are leasing from a private landowner; please let me know where your property is, which will help me to address your view shed concerns. In order to help you with scale, the red line that connects Babacomari South to Babacomari North is one (1) mile.

1) Clēnera does not have information concerning property values before and after our solar facilities' construction. However, we did develop a large facility adjacent to the Indianapolis Motor Speedway, and in a densely populated residential area (see photo of the project at www.clenera.com. For your convenience, I am attaching a brief Q&A fact sheet prepared by the Solar Energy Industry Association examining property values noting that large-scale solar arrays often have no measurable impact on adjacent properties. I refer you to footnotes 3 and 5 on the SEIA Q&A sheet and highly recommend that you take a look at those; both are easily available by searching for them on Google.

2) The existing TEP transmission line is above ground - it is known as the Ft. Huachuca - Vail transmission line. The TEP transmission line is on the Babacomari North project site, and the point of interconnect will be on site. Of note, there will be a one (1) mile collection line from Babacomari South to Babacomari North that will be above ground. Also for your convenience, I am attaching four photos/visual simulations that have been prepared by a 3rd party contractor which illustrates: 1) an actual view looking towards the Babacomari sites from four key observation points (KOPs); and 2) a simulated view of what the view of the facilities will be from the same KOPs. The four simulations illustrate the view as if the panels were fully vertical at 15' (which is only for a very limited time when the sun is at its highest point in the sky), as well as the one mile collection line connecting Babacomari South with Babacomari North. However, you will notice that there is no difference between the actual photographs and the simulated photos because the Babacomari facilities will not be visible - this is due to natural buffers created by distance, topography and vegetation.

3) The energy storage systems (ESS) do not generate electricity, rather they store some of the energy generated by the PV modules, which capture the energy of the sun during daylight hours. The ESS are a means to store electricity from the facilities for distribution onto the grid when the PV modules are not generating electricity e.g., at night, cloudy days, etc.

4) Yes, you can fight our request for a special use permit to construct a utility-scale solar power generation facility. You may contact the Cochise County Planner, Robert Kirschmann, who represents Cochise County and its citizens in the special use permit process. The letter you received from me is the first notification required in submitting a special use permit. Cochise County will also send out a letter soliciting comments prior to the county Planning & Zoning Commission hearing on the project for the special use permit. The Babacomari projects have not been approved; the special use permit is the first step towards gaining county approval. Mr. Kirschmann will be able to provide much more information concerning the process from the county's perspective than I can.

5) The heavy black border on the attached map is all privately owned, and Babacomari North and Babacomari South are leasing the project sites from the landowner. The following, among others, are key to the sites' being selected: the landowner has sufficient land for the project, and he is willing to lease the land for the purpose of developing a utility-scale solar facility; an existing transmission line is within the project area which serves as our point of interconnect; there is a willing buyer of the electricity generated by the two projects. The public will have the opportunity to comment in favor of,

or in opposition to the project with the county Planning & Zoning Commission before the special use permit is approved or denied.

On behalf of Clēnera, Babacomari North and Babacomari South, I thank you for your comments. We are committed to being transparent, good neighbors and good partners with in Cochise County, especially with those neighbors that may be the most impacted by the projects. Being aware of your concerns and objections to the project is important for us to know. So again, thank you.

Sincerely and with best regards,

Eileen Swiers
eileenswiers@gmail.com
July 16, 2020

Clēnera's Response
August 12, 2020

Greetings,

Neighbors of your proposed solar project on the Babacomari Ranch in Whetstone have a few questions regarding your proposed development. We appreciate the opportunity to address those questions directly with you. If you have any questions regarding the following, please let us know.

1. Please send a to scale map, showing the roads (proposed or existing) that will access or serve the solar sites. I am attaching an aerial map that illustrates the sites, which are outlined in white. For scale purposes, the red line that connects Babacomari South and Babacomari North is exactly one mile.

2. Identify on the map the size and location of the areas that will be included in the request for a special use authorization. Please see the attached map. The top project is Babacomari North, which is 560 sq./acres; Babacomari South is 540 sq. acres.

3. What is the name of the special use(s) you are requesting? "A Solar Power Energy Plant." Per Cochise County Zoning Ordinance, Section 1824, "Solar Energy Power Plants are . . . allowed as a Permitted Use in LI and HI and may be permitted in RU and GB Zoning Districts by Special Use Authorization only." The land in question is currently ~~zoned HI and~~ RU4, as such the proposed use is permitted, contingent upon successfully receiving a special use permit from Cochise County.

4. Will there be any other use(s) of the property involved in the solar development? Babacomari North and Babacomari South will not pursue any other use, other than activities associated with the generation of solar power on the leased project sites. Of note, the current use of the open space is grazing by Babacomari Ranch Co.

5. Will any fencing be added? If so, what type and where? What is the purpose of the fencing? For public safety and security purposes the entire perimeter of the facilities will be surrounded by an 8' chain link fence, with strands of barbed wire at the top, with secure access gates and on-site monitoring systems managed remotely.

6. Will you use the existing transmission line shown on the project map? Yes If so, is that the only line that will be used by Clēnera. No If not, will you build transmission lines? Yes. Clēnera will construct a one (1) mile collection line between the Babacomari South project and the Babacomari North project which will be removed after the useful life of the project. Where would they be located? See the red line on the aerial map between Babacomari South and Babacomari North. What will they look like? Single pole, wood construction. What is the height? Approx. 30-70' Please identify all transmission or other lines that will be built on the map you send. All are illustrated.

7. Will power be transmitted to any providers other than TEP? Are there plans to provide power to other providers in the future? The existing transmission line is owned by TEP, which will take ownership of all the power generated by the two Babacomari facilities at the point of interconnect (where we tie

into TEP's transmission line, which is on our site). No, there are no plans to sell power to other providers.

8. What is your breakthrough technology? Clēnera pursues, develops, and deploys the most advanced technology around the world, including breakthrough technology related to bifacial PV modules, energy storage systems, and tracking technologies. In keeping this technology confidential, it allows Clēnera to be unique and it allows our partners to remain strong.

9. What is a hybrid facility? The facilities are "hybrid" as they will have both photovoltaic (PV) modules and the ability to incorporate an energy storage system ("ESS") at the facilities. As you know, the PV modules capture the energy of the sun to convert that power to electricity during daylight hours. The ESS allows any excess electricity generated during the day to be stored for distribution onto the grid when the PV modules are not generating electricity e.g., at night, cloudy days, etc.

10. Will the technology you use require water for cooling or cleaning of the panels? The PV technology being used at the facilities does not require the consumption of water in the generation of electricity. In addition, using Clēnera's operating facility located in Sahuarita, AZ, as a barometer, PV module washing is not required, or at least not often, due to the arid nature of the Arizona desert; for example, in four years of operation, the Sahuarita Facility's modules have never needed to be washed. Notwithstanding, if the modules ever do need to be washed, a third-party contractor will bring a water truck in for this purpose.

11. What is the source of water for the two solar farm sites? As before, no water is required for operation of the facilities.

12. Were you required to perform an environmental impact study? If so, what are the impacts on wildlife that inhabit or migrate through the area, the impact on the Babacomari and San Pedro riparian areas, and the water that flows through the Babacomari? If not, how are you assessing these impacts? What is the anticipated habitat loss? No, an EIS is not required for this project. To date, three environmental studies and a cultural resources study have been completed for the Babacomari North and Babacomari South facilities'. The studies found no negative impact on the local flora and fauna on the cumulative total of 1,100 acres that comprise the sites.

13. Should you choose to install an energy storage system, what system would you install? There are multiple types of energy storage systems, including lithium-ion batteries. However, owing to the fact that technology is rapidly developing and improving, Clēnera's Engineering Department will make a determination on the best and appropriate ESS system when the time comes to install such a system.

14. What firefighting procedures will you have in place should there be a fire at a transformer or from another cause at your site? Babacomari North and Babacomari South will be required to work with and meet all local and state fire standards for the construction and operation of a solar energy project and corresponding battery storage system.

15. How will you control the vegetation around the solar panels and would the use of herbicides be part of that program? Post-construction the project area will be reseeded with native seed varieties. It will be necessary to keep vegetation maintained under the module racking, which can be accomplished with mowing and or sheep grazing. If necessary, noxious weeds will be controlled using controlled spraying in accordance within local, state, and federal regulations.

16. When the lease ends, what will happen to Clēnera's farm? Will it be dismantled, sold or put to some other use? What mitigation would be done if the solar farm is removed from the area? What is the length of your lease? The intended useful life of the project is 35 years. At the end of the life of the project, the solar facilities will be removed, and the modules will be repurposed, salvaged/recycled in then-current acceptable manner, or disposed of in accordance with county, state, and federal requirements. The site and the area will then be stabilized and reseeded with native seed varieties, restoring the site back to its original state.

17. Has Fort Huachuca responded to notice of your proposed facility? No. If so, what was their response? NA

18. Do the anticipated tax revenues represent an annual benefit to the county? If not, how long would it take to realize the benefit you identify? There was a clerical error on the flyer in terms of the tax revenue to Cochise County: the dollar figure is roughly $6.1 million, not $1.75 million. The $6.1 million will be paid over the life of the project.

Finally, as is mentioned on the flyer I sent along with the letter you received, Clēnera is committed to being both a good neighbor and a good environmental steward in Cochise County. On behalf of Clēnera, Babacomari Solar North LLC and Babacomari Solar South LLC, I look forward to being your neighbor.

Sincerely and with best regards,

Troup, Robert
rbrttroup@aol.com
July 23, 2020

Thanks for the opportunity to rake you over the coals for this proposed project. Just kidding, ha ha. I guess this is another way for the Brophys to make even more money. But, I actually have a question for you concerning the racks that support the panels. Whenever a solar project is built, they always scrape the ground clear and laser level it. Why? I know that it makes it easier at the beginning, but it seems to me that most just do it as an accepted practice without really knowing the reason. What if, instead of doing that, the racks were raised up ten or fifteen feet and the vegetation not removed, other than what is absolutely necessary for construction? Using some sort of adjustable "cap" on the poles to enable the racks to be leveled, would be an improvement over acres of dirt.

I think of the large solar fields installed in the Mojave Desert in California, and how they had to mitigate potential damage to the endangered Desert Tortoise. If they had raised the panels and left the vegetation, they probably could have left the tortoises there, and not have to provide anything else. For your information, there are two State protected species at those locations, and because of the Babacomari River just south, potentially two Federally protected species. The two State ones are: Gila Monster, (Heloderma suspectum) and the Ornate Box Turtle (Terrapene ornata). I don't think that the other two are there, but I know one is close and on Babacomari land, and the other could potentially be there, or close. The first is the Mexican Garter Snake (Thamnophis eques megalops), and the second is the Chiricahua Leopard Frog (Lithobates chiricahuensis).

So, in my opinion, finding some way to leave most of the vegetation intact (except the Mesquite trees- they would have to go, or be thinned), would be beneficial in the long run, and the Brophys could continue to graze their cows there. Just curious - I've been thinking about this for years, but never had the opportunity to comment on it before.
Thank you for any consideration.

Sincerely,
Robert Troup

Clēnera's Response
July 23, 2020

Good afternoon Mr. Troup -

Thank you for reaching out to me with your comments and observations - they are both well thought out and thought provoking.

I'm a layman when it comes to construction matters, but based upon my experience with the development of multiple large-scale processing facilities as well as a renewables power plant which were constructed on my watch, I can tell you that just one reason for clearing the land is to facilitate the construction process, especially in terms of addressing elevation/topography issues. You make a very good point about the racking and vegetation, and I believe we've got it covered as the racking is approx. 8' from grade. Also, the soil will be stabilized, and the entire project area will be reseeded with certified weed free native species post-construction, thus mitigating the loss of vegetation and habitat.

In addition, thank you for your comments concerning the species of concern. Clēnera commissioned a habitat study that identified the species you mentioned and found that the Babacomari projects are not sited in the habitat area, if only by a 1/2 mile in in one spot, however, none of the species were found in the site area. Notwithstanding, thank you for making note of the species in your email - it is very helpful information.

As is mentioned in the flyer that accompanied my letter to you, Clēnera is committed to being both a good neighbor and a good environmental steward in Cochise County. We believe that by mitigating the loss of habitat post-construction, as well as simply being good stewards of the land that we will control, we will be that "good environmental neighbor" that we promise to be.

By the way, that was the easiest "raking over the coals" that I have ever had - thank you for taking it easy on me.

Thanks again for reaching out and sharing this information with me - it is helpful. Finally, allow me to say that I am also confident that these will be projects the residents of Cochise County can look at with pride for having them in your "backyard."

Sincerely and with best regards,

Wade, Robert
caozman@gmail.com
July 21, 2020

Apologize for the late notice, but I was out of town. I fully support Clēnera's solar project proposal. Anything that will keep our land out of agriculture and developer's hands is a good thing. Feel free to quote me on that.

Robert Wade
3234 E Desert Storm, Hereford, AZ 85615

Clēnera's Response
July 23, 2020

Thank you so much for reaching out to share your support for the Babacomari North and Babacomari South projects. Rest assured that Clēnera, Babacomari Solar North LLC and Babacomari Solar South LLC are not only excited for the project, but we are confident that the projects will be successful. I am also confident that these will be projects the residents of Cochise County can look at with pride for having them in your "backyard."

Again, thank you for your enthusiastic support.

Sincerely and with best regards,

Wardlaw, Angie
awar@aol.com
July 19, 2020

Hello, Ms. Ashton: My name is Angie Wardlaw. I missed your deadline.
I wrote down some questions. May I have another short deadline please?

Angela Wardlaw:
353 S. Lonely Dove Ln.,
P O Bx 4866, Huachuca City, AZ 85616
520-249-4216

Clēnera's Response
July 19, 2020

Good morning Ms. Wardlaw -

Happy to do so. Please return your comments to me no later than 5:00 p.m., Tuesday, July 21st. I look forward to receiving your comments.

Sincerely and with best regards,

(Mr.) Layne Ashton

Wardlaw, Angie
July 21, 2020

Hello!

My apologies Sir, regarding your name and thank you for letting me submit my questions.

1. What road(s) will be used to enter and exit your site? Further back on Mustang Road. is a muddy mess when it rains.?
2. What Fire Department will be used in the event of a fire?
3. Where is B North and B South from the Mustang Rd and S. Lonely Dove Lane?
4. I live at 353 S. Lonely Dove Lane, Huachuca City, AZ 85616.
5. If you plug in my address into Google Earth. You can see how our house sits. We have million dollar view!
6. Our electricity is provided by SSVEC. I've been wanting solar since we had the house built.. Can we apply for solar from Clēnera?
7. Once your solar fields are operational will their be a glare from your sites?

Clēnera's Response
July 23, 2020

Greetings -

I am attaching a map which illustrates the distance from your home on Lonely Dove Lane to the Babacomari South project; that distance is 1.29 miles as the crow flies. Please note the two white-

outlined areas on the map; these are Babacomari Solar North LLC and Babacomari Solar North LLC facilities. You will be pleased to know that neither project will be visible due to the significant natural barriers, which are: distance, topography, and vegetation.

Please note the red line from Hwy 90 extending west to Babacomari South, which will be the access and exit point for the two facilities. There is currently a gate to the road and an existing deceleration lane to the turnout at Hwy 90, approximately 2.5 miles from the Hwy 82 / Hwy 90 intersection to the north. The project will not use other roads as access to the site e.g. West Railroad Drive, Mustang Road, etc.

It is expected that it will be necessary to enter into a memorandum of understanding or a similar agreement with a local fire district to provide fire protection. It is expected that this would be either the Whetstone Fire District or Sierra Vista Fire Department.

Babacomari North and Babacomari South are not utilities that sell residential power, so unfortunately you will not be able to purchase power from the project. The Babacomari projects we tie into the TEP Ft. Huachuca - Vail transmission line, at which point the power will be owned by TEP.

Photovoltaic (PV) modules are non-glare and are designed to absorb rather than reflect the sunlight reaching the modules. PV modules are generally less reflective than windows.

As is mentioned on the flyer I sent along with the letter you received, Clēnera is committed to being both a good neighbor and a good environmental steward in Cochise County. On behalf of Clēnera, Babacomari North and Babacomari South, I look forward to being your neighbor.

Sincerely and with best regards,

Wardlaw, Angie
July 24, 2020

Thank you Neighbor!

Clēnera's Response
July 23, 2020

My pleasure. Have a great day.

Sincerely and best regards,

Woods, David
davidcwoods1974@icloud.com
July 16, 2020

Hello Layne,

My family and I own the property east of Babacomari South, west of HWY 90 and South of Mustang Rd. The 36 acres is split into 4 different parcels. All of us have received a letter from Clenera, and want to welcome you to Cochise County. Our specific property, called Campstone, was originally planned to be over 1000 residential home sites and was moving forward nicely back before 2008. Long story short, it never happened and here we are.

My family and I all love Cochise County and eventually want to retire down on the property. With everything going on in the world, this could be sooner than later. We are four siblings. We all grew up in Southern Arizona and have our roots there, having grown up in Tucson, Arizona.

Having received your letter in the mail yesterday, I decided to take a look at the company Clenera. Ironically, your company is in the process of building on a site I worked next to back in 2017 in Boulder City, Nevada. The Techren Solar Project your company is working on is right next door to the site I commissioned, Boulder Solar. Sunpower was the contractor, although I worked for the sub contractor NEP which became Primorous, Inc. When I started on Boulder Solar it was supposed to be a 500 megawatt site, and last 5 years, but poor management shut them down.

All my family can do is wish the best for the Babacomari Solar project and hope that the long term affect has a positive affect on the community. Any long term prospectus on the project would be greatly appreciated.

Best Wishes,
David Woods

Clēnera's Response
July 23, 2020

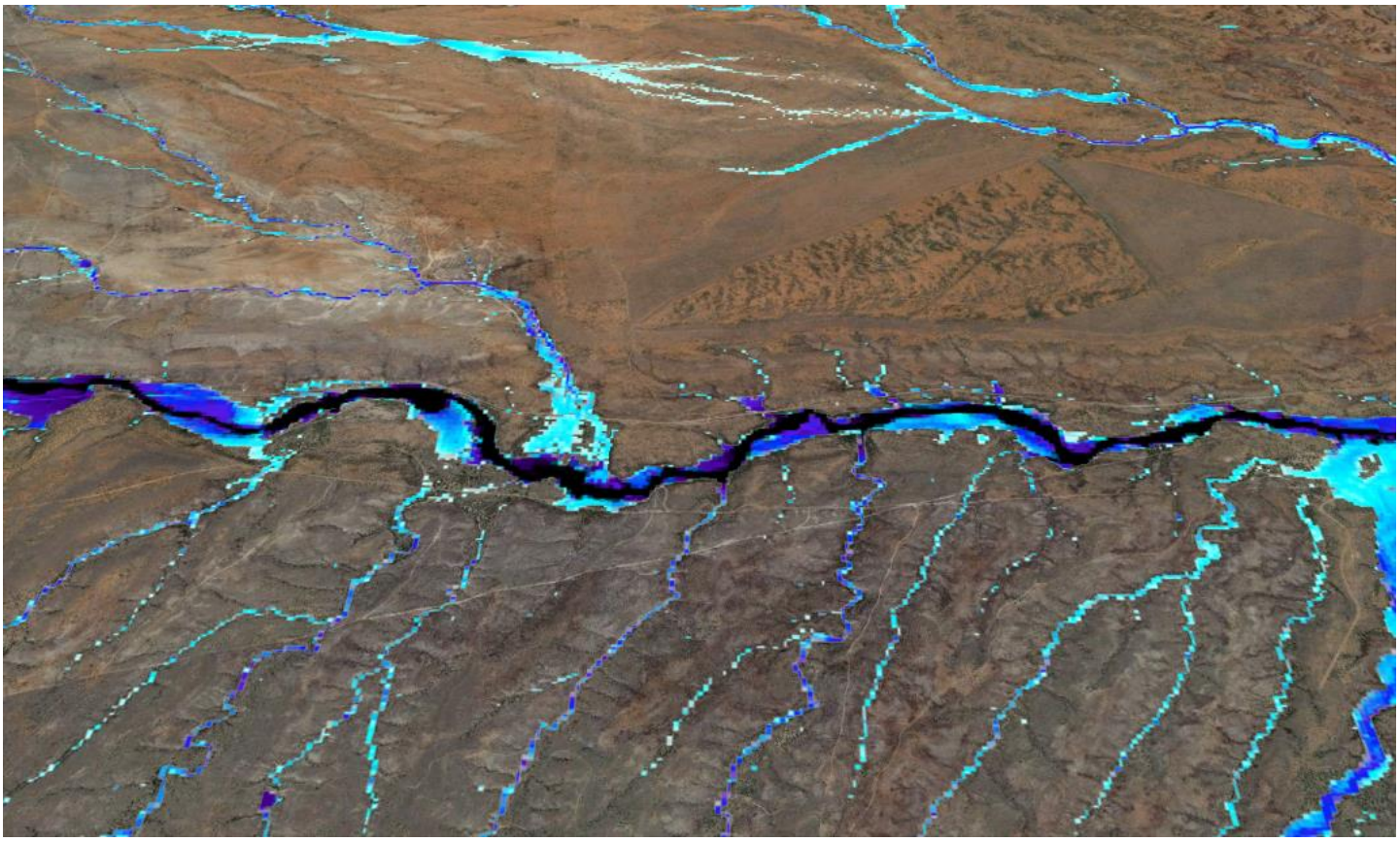
Good morning David -

Thank you so much for reaching out; on behalf of Clēnera and myself, thank you for your welcoming comments. Clēnera, Babacomari Solar North LLC and Babacomari Solar South LLC are excited for the project, and we are confident that the projects will be successful - I believe it will be a project that the residents of Cochise County can look to with pride having it in your "backyard."

As far as the long-term, both facilities will have 35-year useful life-spans, at which time it will be decommissioned, removed, the land stabilized and native seed planted to take the area back to its original state.

Again, thank you for your warm welcome. My best regards to you and your family.

Sincerely,



HYDROLOGY STUDY

Babacomari Solar Project

Cochise County, Arizona

OCTOBER 14, 2020

PREPARED FOR:

Clēnera

PREPARED BY:

Westwood

Hydrology Study

Babacomari Solar Project

Cochise County, Arizona

Prepared For:

Clenera, LLC
800 W Main St, Suite 900
Boise, ID 83702

Prepared By:

Westwood
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
(952) 937-5150

Project Number: R0027210.00
Date: October 14, 2020

Westwood

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Executive Summary

The purpose of the study is to analyze and review the existing hydrology of the Babacomari Solar project ("the project") and any impacts that the hydrology may play in the design of the proposed solar array. This report was prepared to be used by the project team in the design and layout of the project and is not intended for submittal to reviewing agencies for stormwater permitting.

The project site is proposed on approximately 10,900 acres and is located approximately 4 miles northwest of Huachuca City in Cochise County, Arizona. The site has varying terrain due to the Babacomari River that runs east through the project area. The modeled watershed area encompasses approximately 95 square miles and slopes towards the Babacomari River from the north and south.

Federal Emergency Management Agency (FEMA) has completed a study to determine flood hazards for the selected location; the project area contains FEMA Flood Hazard Zone A. No preliminary or pending FEMA data was located that will affect the project area.

The majority of the proposed solar facility will consist of above ground mounted solar modules. Natural desert landscape will be restored below the modules and will make up a majority of the site's land cover. A small amount of impervious surface will also be added from the gravel access roads and electrical equipment pads, but typically only makes up approximately 3-5% of the total project area. The project should be designed to minimize grading and maintain existing drainage patterns.

The hydrologic modeling in this report was created using FLO-2D modeling software. FLO-2D was used to review the overall watershed drainage to and through the project to determine if any overland runoff causes flooding, high velocity, or scour impacts to the site.

The analysis shows low to moderate water depths and velocities (Exhibits 6 through 7A) across the majority of the site. Higher flood depths exist within the Babacomari River and the surrounding areas located within and adjacent to the site. Several other concentrated flow paths show higher flood depths in the north, northeast, and southwest portions of the project area. Scour is expected throughout the site within and surrounding the Babacomari River and other concentrated flow paths (Exhibit 8). Based on experience with similar projects, the majority of the site is suitable for the planned development by avoiding or designing to areas of high flood depths.

Data Sources

TABLE 1: DATA SOURCES

Task	Format	Source	Use
Elevation	1-Foot Lidar 1-Meter DEM 10-Meter DEM	Westwood 2018 USGS Arizona Brawley Rillito Lidar USGS	FLO-2D Model Elevations
Crop Data	Shapefile	USDA 2013 Crop Data Layer	Landcover
Soils	Shapefile	USGS SSURGO Dataset	Curve Numbers
Precipitation	PDF File	NOAA Atlas 14	Design Storms
HUC-12 Drainage Boundary	Shapefile	USGS	Define Model Extents
Site Boundary	KMZ	Clenera	Define Model Extents
2014 Aerial Photography	ArcGIS Map Service	USDA FSA	Reference
FEMA Flood Zones	Shapefile, PDF	FEMA	Reference
Culvert Locating and Sizing	Aerial Imagery	Google Earth	Culvert Modeling
River Discharge Data	PDF	USGS StreamStats	100-Year Peak Flow Rate

Existing Conditions

The project area is located approximately 4 miles northwest of Huachuca City in Cochise County, Arizona. The project site is approximately 10,900 acres and is located on varying terrain that generally slopes to the east.

Watershed Hydrology

The modeled watershed area encompasses approximately 95 square miles. The Babacomari River flows east through the central portion of the modeled watershed and the southern portion of the project area. Numerous concentrated flow paths merge with the Babacomari River from both the north and south.

Onsite Conditions

The project is located on varying terrain surrounding the Babacomari River. Slopes generally range from 1% to 5%, although some locations throughout the project site reach higher slopes of up to and over 15%. The western project area has steeper slopes than the eastern portion. The landcover on the project site is primarily shrubland (Exhibit 4) and has soils that are primarily belonging to Hydrologic Soils Group C and D (Exhibit 3). The main potential hydrologic issues on site are flooding and erosive velocities.

FEMA Flood Zones

FEMA has completed a study to determine flood hazards for the selected location; the project area is covered by FIRM panels 04003C1815F, 04003C1817F, 04003C1819F, 04003C1820F, 04003C1836F, 04003C1838F, 04003C1839F, 04003C2105F, and 04003C2110F (Appendix D). The project site contains areas of FEMA Zone A flood hazards. A FEMA Zone A flood hazard is a 100-year flood hazard with no base flood elevations determined. No preliminary or pending FEMA changes are proposed within the project area.

Proposed Conditions

The majority of the proposed solar facility will consist of above ground mounted solar modules. Natural desert landscaping will be restored below the modules and will make up a majority of the land cover. A small amount of impervious surface will be added from the gravel access roads and electrical equipment pads. The project should be designed to minimize grading and maintain existing drainage patterns. A flood analysis of pre-development and post-development depths will be completed once civil design is finalized.

Post-Construction Stormwater Management

Cochise County requires a Drainage Analysis with an approved Notice of Intent for projects greater than 1 acre, as stated in the Cochise County Floodplains Regulations Report (Appendix E).

The proposed site should be designed to minimize the increase in runoff volumes and rates using the low impact development (LID) approach. The proposed management will consist of dispersed sheet flow under proposed panels and throughout the site. Basins may also be required to mitigate any increases due to the added impervious areas.

The proposed site will consist of solar panels, gravel roads, and other electrical equipment. Solar panels have a unique runoff characteristic, not like buildings or roads, but a fully disconnected impervious surface. The runoff generated from the solar panels will flow to the edge of the panels and will be allowed to drop onto the pervious surface below.

FLO-2D Modeling

FLO-2D is a physical process model that routes rainfall runoff and flood hydrographs over flow surfaces or in channels using the dynamic wave approximation to the momentum equation. FLO-2D offers advantages over 1-D models and unit hydrograph methods by allowing for breakout flows and visualization of flows across a potential site. The primary inputs are a DTM (elevation data), curve numbers and precipitation. Major culverts impacting the site were modeled based on aerial imagery provided by Google Earth. The modeled culvert locations are shown on Exhibit 6.

Because of the size of the modeled watershed and complex flowpaths through the project, a FLO-2D model with 50' grid cells was utilized to determine flow depths and velocities throughout the site.

Elevation Data

The elevation data input into the FLO-2D model was a blend of 1-foot Lidar data, 1-meter DEM data, and 10-meter DEM data from USGS (Exhibit 5), which was incorporated into the DTM using the export to xyz function in Global Mapper. These XYZ files are read directly into FLO-2D.

Watershed Soils and Land Cover

USDA-NRCS SSURGO soil data provides soil types within the project boundary and full coverage of the contributing watershed. Soils are primarily classified as Hydrologic Soil Group C and D in the project boundary (Exhibit 3). Land cover was obtained from the USDA 2013 Crop Data Layer. Exhibit 4 displays the land cover classes for the entire watershed. Curve numbers were applied to each grid cell in the FLO-2D model based on intersecting the grid with the curve numbers (Exhibit 5).

Precipitation

Precipitation data for both the project site and the mountainous contributing watershed was downloaded from NOAA Atlas 14 (Appendix A). These rainfall depths were averaged and used for the FLO-2D analysis for the 100-year, 24-hour storm. The average rainfall depth of 4.35 inches was distributed based on a nested Atlas 14 distribution pattern and input into FLO-2D.

Inflows

Five inflows were added to the FLO-2D model due to the large drainage area reaching the project site. Inflow 1, 2, and 3 were added for the drainage reaching the eastern portion of the project site. The Babacomari River, denoted as Inflow 4, enters the modeled watershed from the west and flows east through the southern portion of the project area. Inflow 5 accounted for the drainage area reaching the northern portion of the modeled watershed. The 100-year peak flood for Inflow 1-5 was 4,950 cfs, 1,270 cfs, 4,470 cfs, 14,200 cfs, and 8,080 cfs, respectively, and was found using USGS StreamStats (Appendix C). An inflow hydrograph was created using this data and was added to the model (Exhibits 6-7A).

Flood Analysis Results

Existing Conditions Flood Analysis

The analysis shows low to moderate water depths and velocities (Exhibits 6 through 7A) across the majority of the site. During a 100-year storm, the flood depths across the majority of the project area are less than 1 foot with velocities less than 1 foot/second with the exception of near

the Babacomari River and other concentrated flow paths, where the flood depths and velocities can reach up to and over 4 feet and 3 feet/second, respectively. Higher flood depths occur in the north, northeast, and southwest portions of the project area. See Exhibits 6 through 7A for areas within the project with higher flood depths and velocities. Scour is expected on site near the Babacomari River and other concentrated flow paths (Exhibit 8).

Recommendations

Based on experience on similar projects, the site is suitable for the planned development and hydrologic concerns can be addressed by either avoiding areas of high flood depths or through detailed engineering design. All facilities within areas of high flood depths should be raised by at least 1' above 100-year, 24-hour peak flood elevations.

Next Steps

1. Final engineering design should account for the flood depths and velocities presented in Exhibits 6-7A.

2. Facilities to be elevated 1' above the 100-year, 24-hour peak flood elevations.

3. Proposed facilities should avoid FEMA Flood Zones located onsite.

4. Stormwater management should be revisited to ensure the final design meets the local and state requirements.

Included Output Files

1. Shapefile of 100-year Rain Event Flow Depth
   2020-10-14_Babacomari_100YearFlowDepth.shp
   Attribute "ID" = Grid Cell Number
   Attribute "VAR" = Max Flow Depth (Feet)

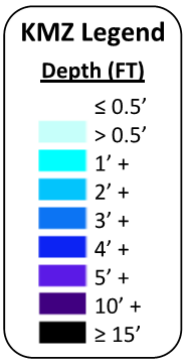
2. Shapefile of 100-year Rain Event Velocity
   2020-10-14_Babacomari_100YearVelocity.shp
   Attribute "ID" = Grid Cell Number
   Attribute "VAR" = Velocity (FPS)

3. KMZ of 100-year Rain Event FLO-2D
   2020-10-14_Babacomari_100YearFLO-2D.kmz
   Overlay in Google Earth for graphical representation.

4. DWG of 100-year Rain Event Flow Depth Contours
   2020-10-14_Babacomari_100YearFlowDepthContours.dwg

5. DWG of 100-year Rain Event Velocity Contours
   2020-10-14_Babacomari_100YearVelocityContours.dwg

6. DWG of 100-year Rain Event Scour Contours
   2020-10-14_Babacomari_100YearScourContours.dwg



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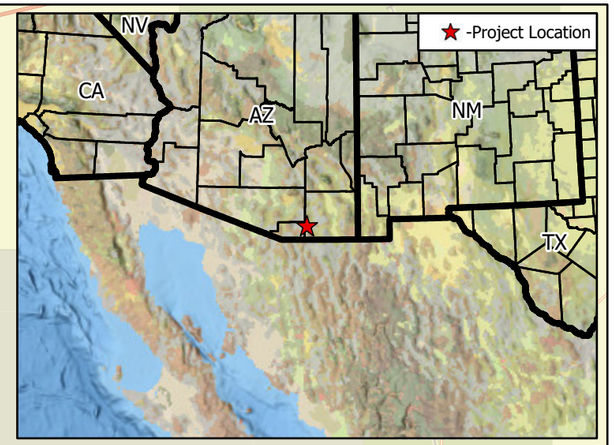
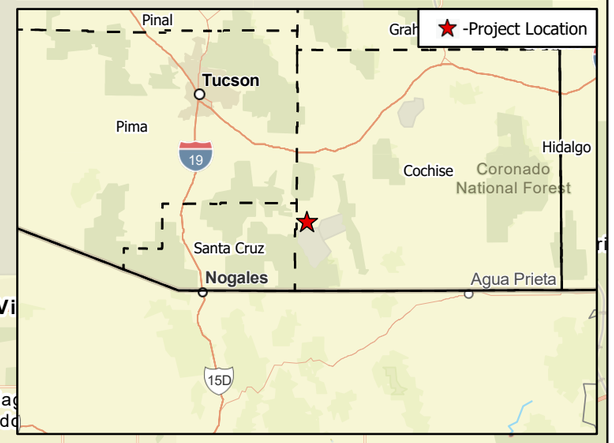
Exhibits





Sonoita
Hacienda los Encino
Elgin
Elgin Rd
Upper Elgin Rd
Elgin Canelo Rd
Las Cienegas NCA
Canelo
Canelo Pass Rd
Patagonia San Rafael Rd
Sunnyside
Santa Cruz
Cochise
W Highway 82
E AZ-82
Campstone
Huachuca City
E AZ-90
Sierra Vista Municipal Airport
Apache Flats
Fort Huachuca
Bonnie Blink
Fort Huachuca
Fry
S 7th St
S Buffalo Soldier Trl
S Moson Rd
E Ramsey Rd
Sierra Vista Estates
82
83
92

Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

Legend

- Project Boundary
- FLO-2D Model Boundary
- County Boundary

Westwood
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N

0 Miles 2

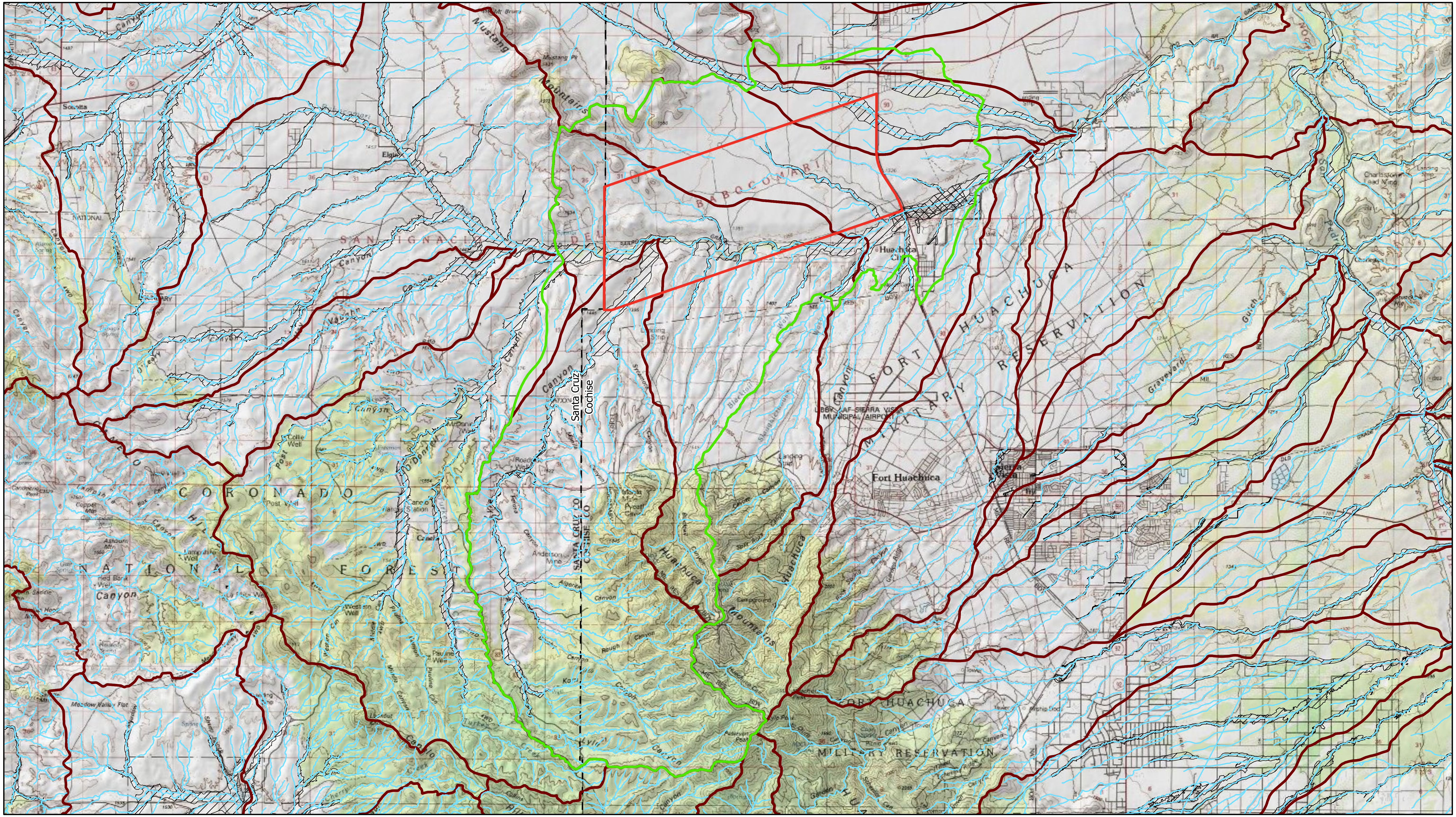
Babacomari Solar Project

Cochise County, Arizona

Exhibit 1: Location Map

August 17, 2020

N:\0027210.00\GIS\Hydro Exhibits\ArcPro\Babacomari Solar Project.aprx
Location Map - Location Map | 8/17/2020 4:17 PM | KLiebsch



Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

N:\0027210.00\GIS\Hydro Exhibits\ArcPro\Babacomari Solar Project.aprx
Base Map - Base Map | 8/17/2020 4:56 PM | KLNewburg

Legend

- Project Boundary
- FLO-2D Model Boundary
- County Boundary
- NHD Flowline
- HUC 12 Boundary
- FEMA Zone A
- FEMA Zone AE

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N

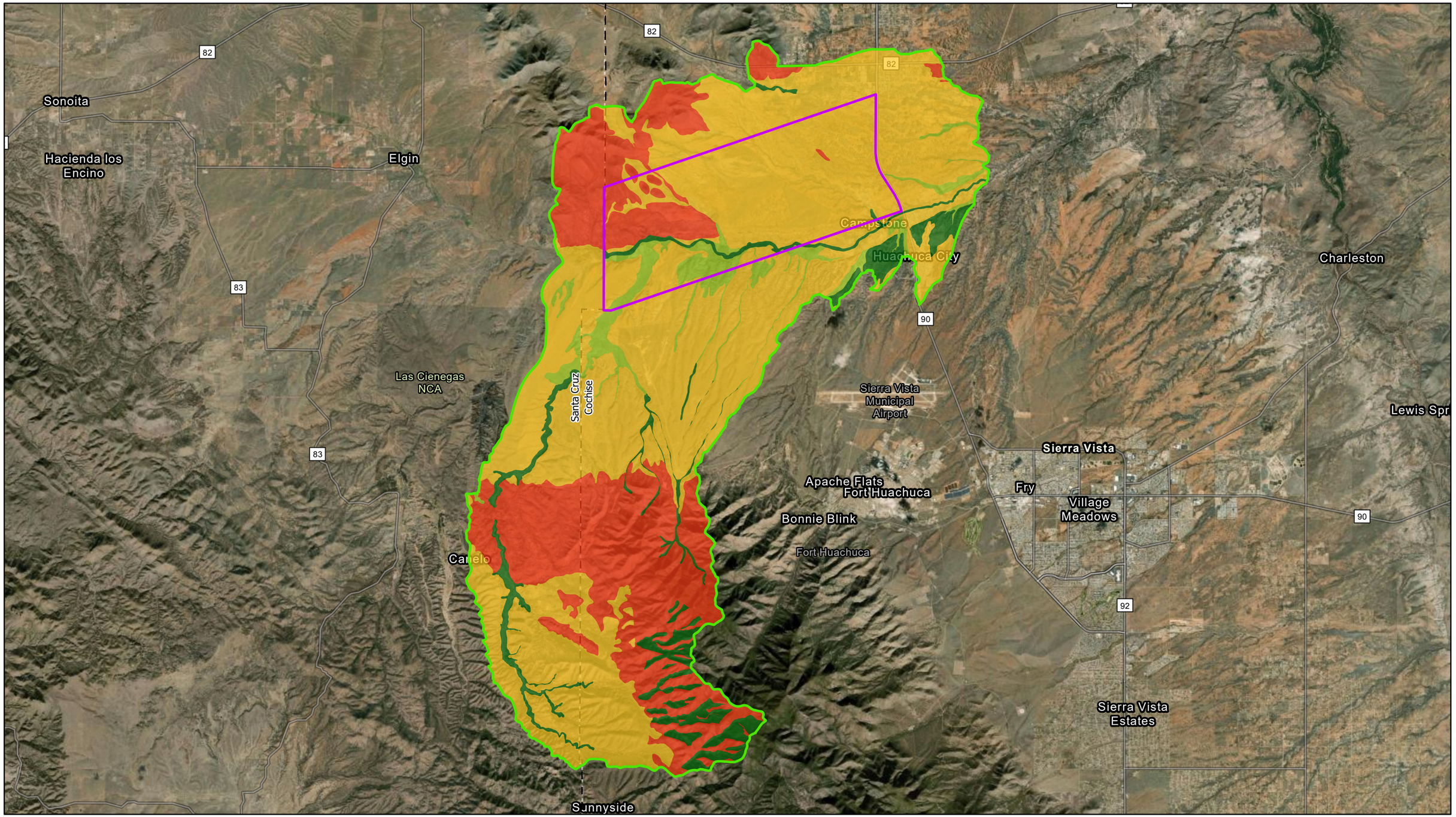
Miles
0 2

Babacomari Solar Project

Cochise County, Arizona

Exhibit 2: Base Map

August 17, 2020



Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

Legend

- Project Boundary
- FLO-2D Model Boundary
- County Boundary

Hydrologic Soils Group

- A
- B
- C
- D

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N

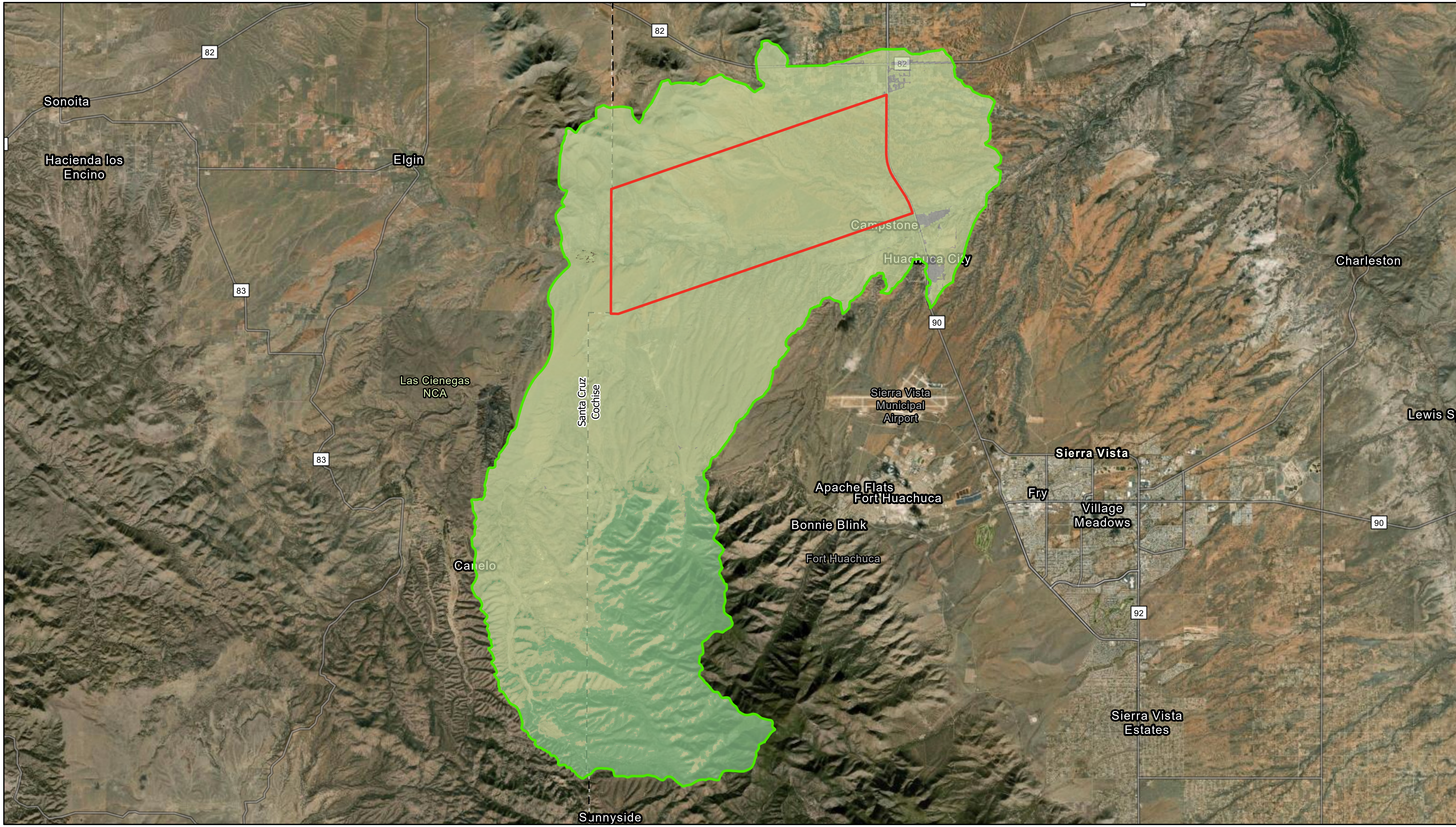
0 2 Miles

Babacomari Solar Project

Cochise County, Arizona

Exhibit 3: Soils Map

August 24, 2020



Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

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Legend

Project Boundary

FLO-2D Model Boundary

County Boundary

Landcover

Developed

Evergreen Forest

Grassland/Pasture

Shrubland

N

0 2 Miles

Babacomari Solar Project

Cochise County, Arizona

Exhibit 4: Landcover Map

August 17, 2020

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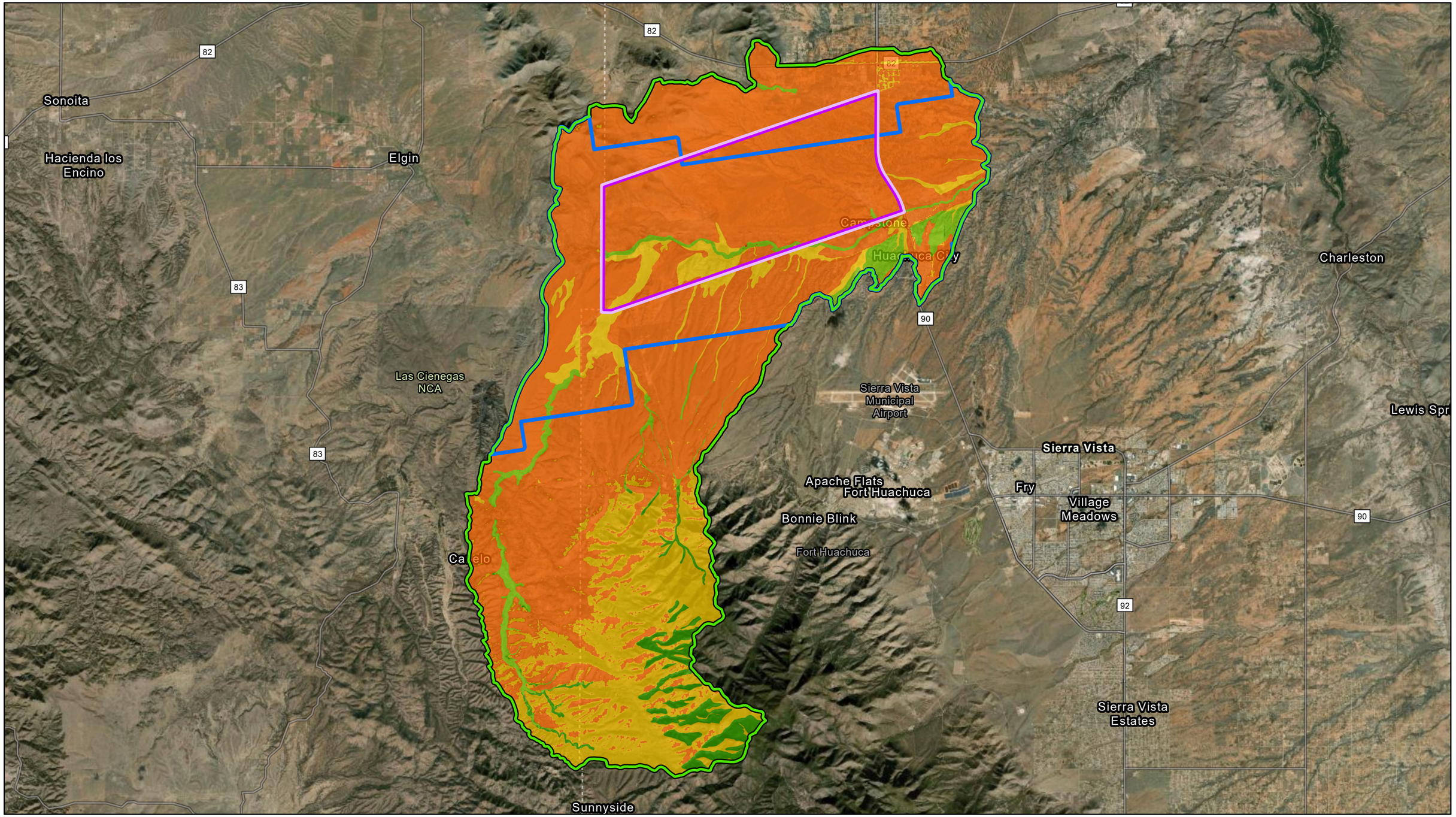
Landcover - Landcover | 8/17/2020 5:53 PM | KLNewburg



Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

Legend

- Project Boundary
- FLO-2D Model Boundary
- County Boundary
- 1-Foot Extents
- 1-Meter Extents
- 10-Meter Extents

Curve Number

- 40 - 49
- 50 - 59
- 60 - 69
- 70 - 79
- 80 - 89
- 90 - 99

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N

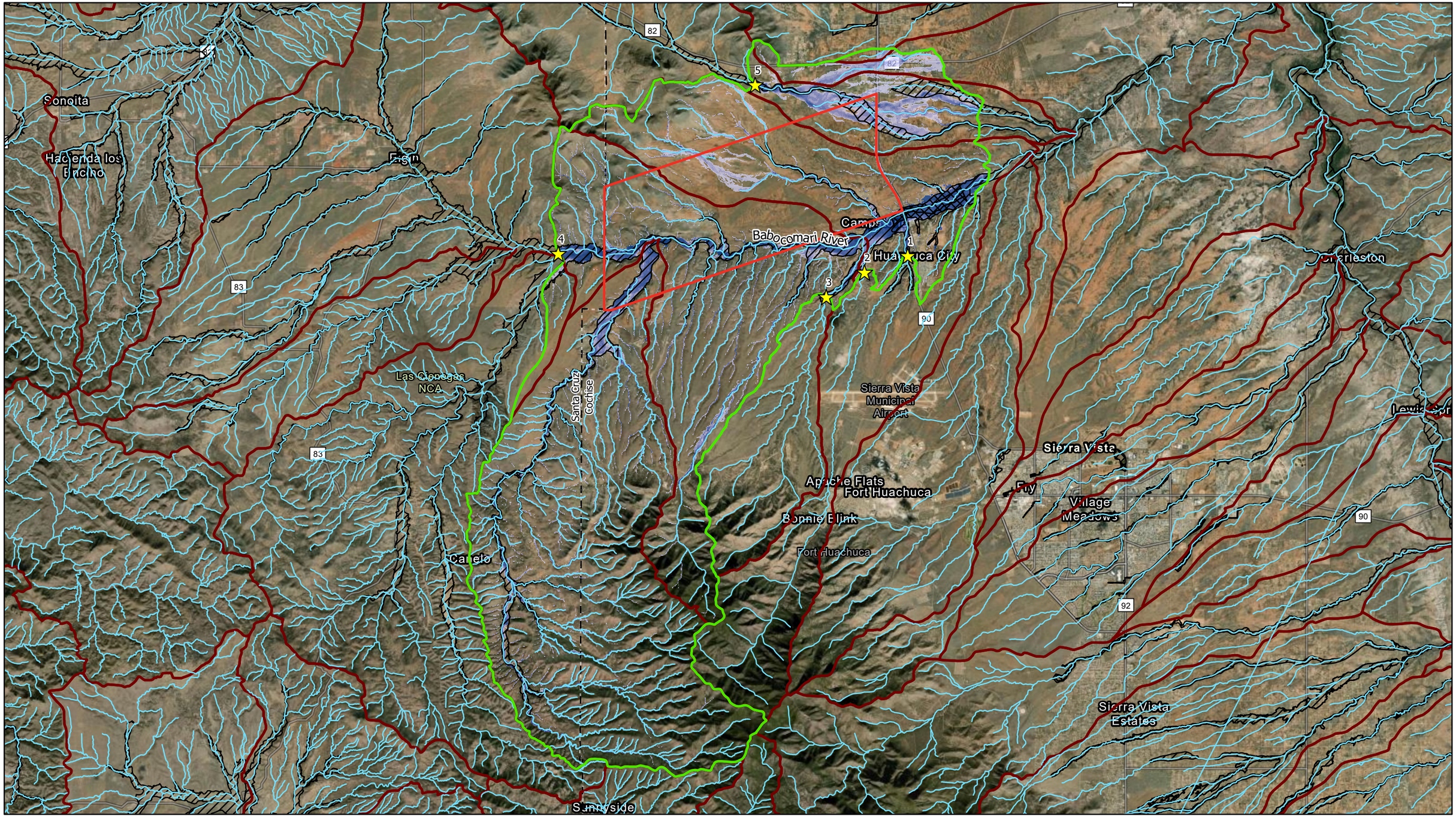
0 Miles 2

Babacomari Solar Project

Cochise County, Arizona

Exhibit 5: Curve Number and Topographic Source Map

October 14, 2020



Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

Legend

- Project Boundary
- FLO-2D Model Boundary
- County Boundary
- HUC 12 Boundary
- NHD Flowline
- FEMA Zone A
- FEMA Zone AE
- Inflow Locations

Peak Flow Depth (ft)

- 0.50 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 4.00
- 4.01 - 6.00
- 6.01 +

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N

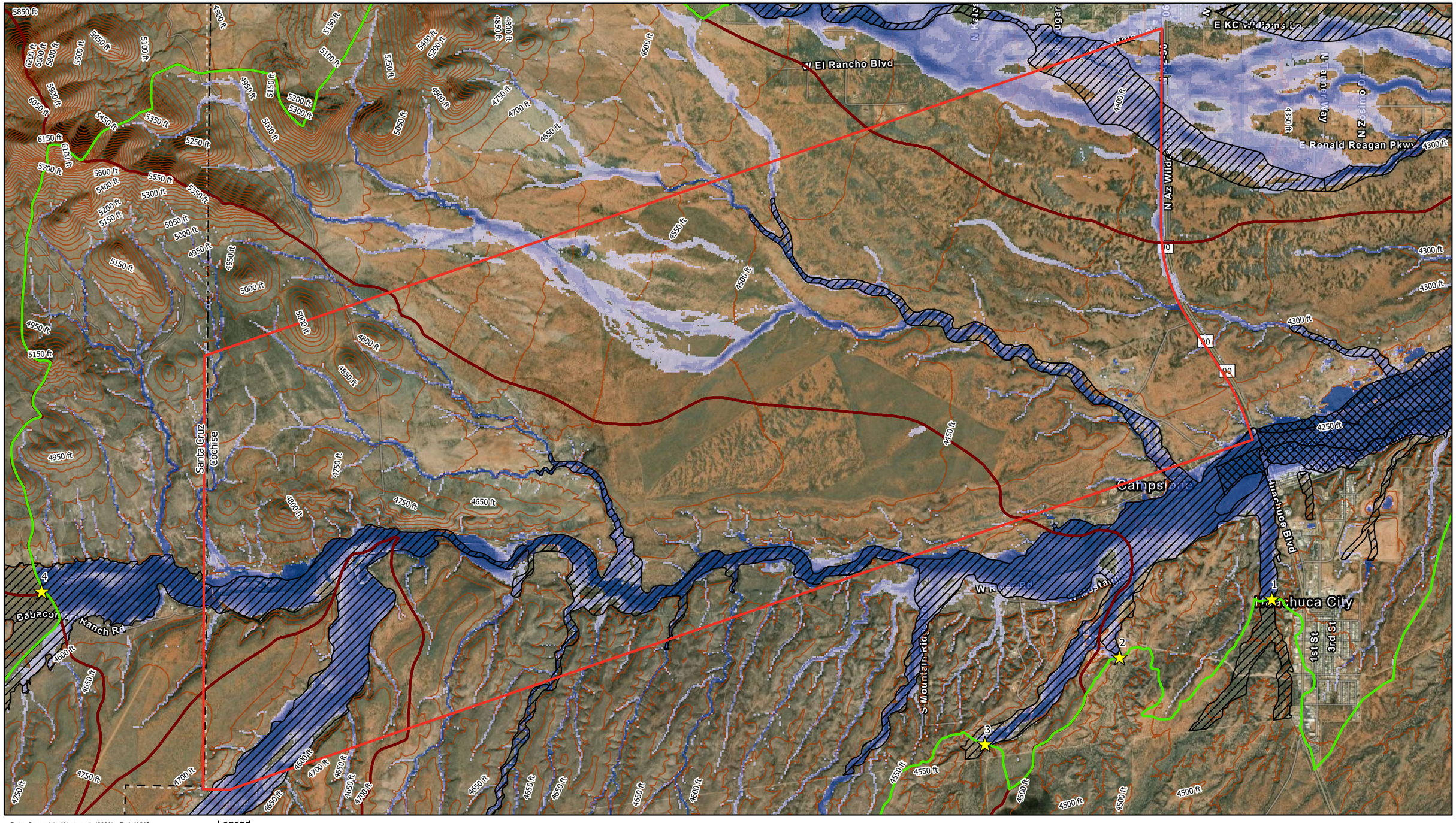
0 Miles 2

Babacomari Solar Project

Cochise County, Arizona

Exhibit 6: 100-Year Max Water Depth Map

October 14, 2020



Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

Legend

- Project Boundary
- FLO-2D Model Boundary
- County Boundary
- HUC 12 Boundary
- FEMA Zone A
- FEMA Zone AE
- Inflow Locations
- 50' Contours

Peak Flow Depth (ft)

- 0.50 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 4.00
- 4.01 - 6.00
- 6.01 +

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Babacomari Solar Project

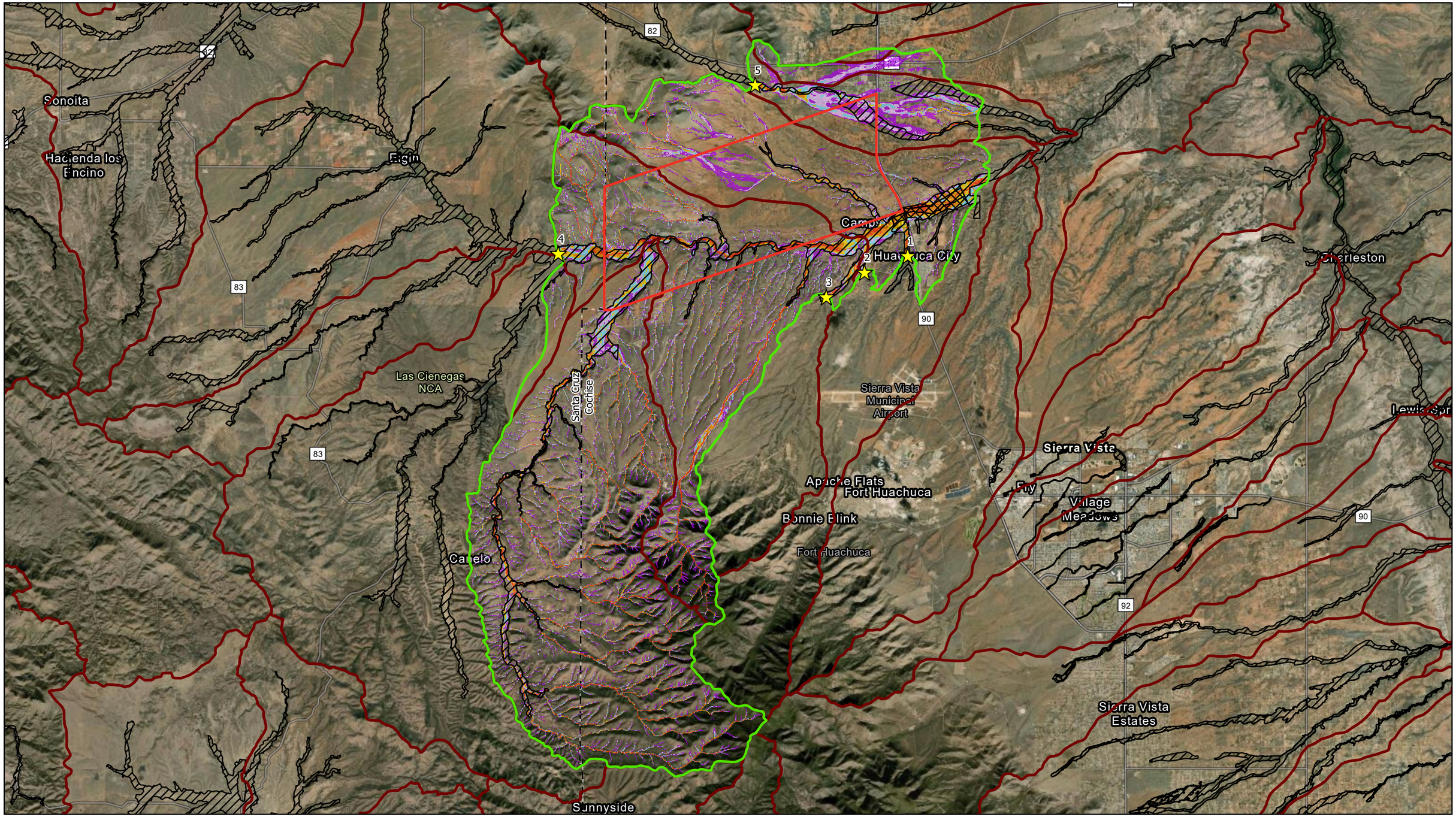
Cochise County, Arizona

Exhibit 6A: 100-Year Max Water Depth Project Area Map

October 14, 2020

N

0 Feet 3,000



Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

Legend

- Project Boundary
- FLO-2D Model Boundary
- County Boundary
- HUC 12 Boundary
- FEMA Zone A
- FEMA Zone AE
- Inflow Locations

Peak Velocity (fps)

- 1.00 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 4.00
- 4.01 +

N

0 Miles 2

Babacomari Solar Project

Cochise County, Arizona

Exhibit 7: 100-Year Peak Velocity Map

October 14, 2020

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100 YR Peak Velocity Map - 100 YR Peak Velocity | 10/14/2020 10:21 AM | KLeinsberg

Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

Legend

- Project Boundary
- FLO-2D Model Boundary
- County Boundary
- HUC 12 Boundary
- FEMA Zone A
- FEMA Zone AE
- Inflow Locations
- 50' Contours

Peak Velocity (fps)

- 1.00 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 4.00
- 4.01 +

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N

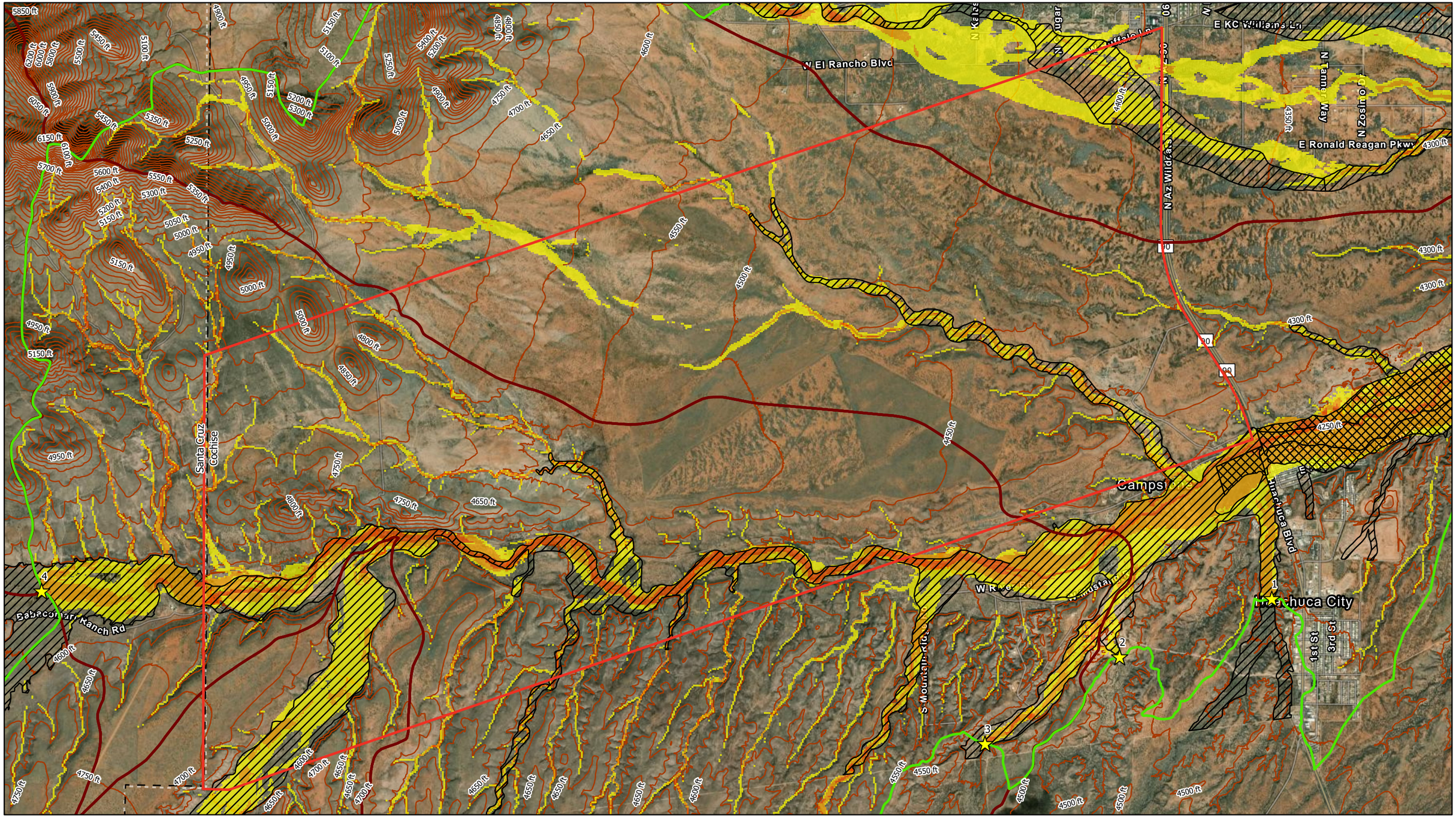
0 Feet 3,000

Babacomari Solar Project

Cochise County, Arizona

Exhibit 7A: 100-Year Peak Velocity Project Area Map

October 14, 2020



Data Source(s): Westwood (2020); Esri WMS Basemap Imagery (Accessed 2020); USGS (2020); FEMA (2020); USDA (2020)

Legend

- Project Boundary
- FLO-2D Model Boundary
- County Boundary
- HUC 12 Boundary
- FEMA Zone A
- FEMA Zone AE
- Inflow Locations
- 50' Contours

Scour (ft)

- 1.00 - 1.50
- 1.51 - 2.00
- 2.01 +

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Babacomari Solar Project

Cochise County, Arizona

N

0 Feet 3,000

Exhibit 8: 100-Year Scour Map

October 14, 2020

Appendix A

Atlas 14 Rainfall Data

NOAA Atlas 14, Volume 1, Version 5
Location name: Huachuca City, Arizona, USA*
Latitude: 31.6406°, Longitude: -110.3874°
Elevation: 4481.13 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.272** (0.240-0.310)	**0.349** (0.307-0.398)	**0.455** (0.399-0.518)	**0.534** (0.467-0.606)	**0.640** (0.555-0.728)	**0.720** (0.618-0.822)	**0.801** (0.680-0.918)	**0.883** (0.740-1.02)	**0.990** (0.813-1.15)	**1.07** (0.867-1.26)
10-min	**0.414** (0.365-0.472)	**0.531** (0.468-0.606)	**0.692** (0.607-0.788)	**0.812** (0.711-0.923)	**0.974** (0.844-1.11)	**1.10** (0.940-1.25)	**1.22** (1.03-1.40)	**1.34** (1.13-1.55)	**1.51** (1.24-1.75)	**1.63** (1.32-1.92)
15-min	**0.513** (0.453-0.586)	**0.658** (0.579-0.751)	**0.858** (0.753-0.977)	**1.01** (0.881-1.14)	**1.21** (1.05-1.37)	**1.36** (1.17-1.55)	**1.51** (1.28-1.73)	**1.67** (1.40-1.92)	**1.87** (1.53-2.17)	**2.02** (1.64-2.38)
30-min	**0.691** (0.610-0.789)	**0.887** (0.780-1.01)	**1.16** (1.01-1.32)	**1.36** (1.19-1.54)	**1.63** (1.41-1.85)	**1.83** (1.57-2.09)	**2.04** (1.73-2.33)	**2.24** (1.88-2.59)	**2.52** (2.07-2.93)	**2.73** (2.20-3.20)
60-min	**0.856** (0.755-0.976)	**1.10** (0.966-1.25)	**1.43** (1.25-1.63)	**1.68** (1.47-1.91)	**2.01** (1.74-2.29)	**2.27** (1.94-2.59)	**2.52** (2.14-2.89)	**2.78** (2.33-3.20)	**3.12** (2.56-3.62)	**3.37** (2.73-3.96)
2-hr	**0.978** (0.866-1.11)	**1.24** (1.10-1.41)	**1.60** (1.41-1.81)	**1.87** (1.64-2.12)	**2.25** (1.96-2.55)	**2.55** (2.20-2.90)	**2.86** (2.44-3.26)	**3.18** (2.66-3.64)	**3.61** (2.96-4.17)	**3.94** (3.18-4.61)
3-hr	**1.03** (0.913-1.16)	**1.29** (1.15-1.46)	**1.64** (1.46-1.86)	**1.93** (1.70-2.17)	**2.32** (2.03-2.62)	**2.63** (2.28-2.98)	**2.96** (2.53-3.36)	**3.30** (2.77-3.77)	**3.77** (3.09-4.36)	**4.14** (3.33-4.85)
6-hr	**1.17** (1.04-1.33)	**1.47** (1.30-1.67)	**1.85** (1.64-2.10)	**2.17** (1.91-2.45)	**2.61** (2.28-2.96)	**2.97** (2.56-3.37)	**3.35** (2.85-3.82)	**3.75** (3.13-4.30)	**4.31** (3.51-4.99)	**4.76** (3.80-5.58)
12-hr	**1.32** (1.18-1.49)	**1.65** (1.47-1.86)	**2.06** (1.83-2.31)	**2.40** (2.12-2.69)	**2.87** (2.51-3.21)	**3.24** (2.81-3.64)	**3.62** (3.10-4.10)	**4.03** (3.39-4.59)	**4.59** (3.78-5.29)	**5.04** (4.08-5.87)
24-hr	**1.50** (1.39-1.62)	**1.87** (1.73-2.02)	**2.32** (2.15-2.51)	**2.67** (2.47-2.89)	**3.15** (2.90-3.41)	**3.53** (3.23-3.81)	**3.91** (3.56-4.22)	**4.29** (3.89-4.65)	**4.81** (4.31-5.34)	**5.20** (4.64-5.93)
2-day	**1.67** (1.55-1.80)	**2.07** (1.92-2.24)	**2.55** (2.36-2.75)	**2.95** (2.73-3.18)	**3.50** (3.22-3.77)	**3.93** (3.60-4.25)	**4.38** (3.99-4.75)	**4.85** (4.38-5.27)	**5.48** (4.89-6.00)	**5.98** (5.29-6.58)
3-day	**1.83** (1.70-1.97)	**2.27** (2.11-2.45)	**2.80** (2.60-3.02)	**3.24** (3.00-3.50)	**3.85** (3.55-4.15)	**4.34** (3.98-4.68)	**4.85** (4.41-5.25)	**5.37** (4.85-5.84)	**6.10** (5.43-6.67)	**6.67** (5.88-7.33)
4-day	**1.98** (1.85-2.14)	**2.46** (2.29-2.67)	**3.05** (2.83-3.29)	**3.53** (3.27-3.81)	**4.20** (3.88-4.54)	**4.74** (4.35-5.12)	**5.31** (4.83-5.75)	**5.90** (5.32-6.41)	**6.71** (5.97-7.34)	**7.36** (6.48-8.09)
7-day	**2.38** (2.21-2.57)	**2.97** (2.76-3.21)	**3.68** (3.41-3.97)	**4.25** (3.94-4.58)	**5.03** (4.63-5.42)	**5.64** (5.18-6.08)	**6.27** (5.72-6.77)	**6.91** (6.26-7.49)	**7.78** (6.97-8.48)	**8.45** (7.50-9.26)
10-day	**2.75** (2.56-2.96)	**3.42** (3.19-3.69)	**4.22** (3.93-4.54)	**4.84** (4.51-5.20)	**5.68** (5.27-6.10)	**6.31** (5.82-6.79)	**6.95** (6.38-7.50)	**7.60** (6.93-8.21)	**8.44** (7.62-9.17)	**9.08** (8.13-9.91)
20-day	**3.80** (3.53-4.09)	**4.74** (4.40-5.11)	**5.79** (5.38-6.24)	**6.59** (6.11-7.09)	**7.61** (7.04-8.18)	**8.36** (7.71-9.00)	**9.09** (8.35-9.80)	**9.79** (8.97-10.6)	**10.7** (9.72-11.6)	**11.3** (10.2-12.4)
30-day	**4.70** (4.37-5.05)	**5.86** (5.44-6.31)	**7.10** (6.60-7.63)	**8.02** (7.45-8.61)	**9.15** (8.49-9.83)	**9.96** (9.21-10.7)	**10.7** (9.91-11.6)	**11.5** (10.5-12.4)	**12.4** (11.3-13.4)	**13.0** (11.8-14.1)
45-day	**5.74** (5.36-6.16)	**7.14** (6.65-7.66)	**8.58** (7.99-9.18)	**9.60** (8.93-10.3)	**10.8** (10.1-11.6)	**11.7** (10.9-12.5)	**12.5** (11.6-13.4)	**13.2** (12.2-14.2)	**14.1** (13.0-15.2)	**14.7** (13.5-15.9)
60-day	**6.63** (6.19-7.09)	**8.23** (7.69-8.81)	**9.84** (9.20-10.5)	**11.0** (10.3-11.8)	**12.4** (11.5-13.2)	**13.3** (12.4-14.2)	**14.2** (13.2-15.2)	**15.0** (13.9-16.1)	**15.9** (14.7-17.1)	**16.5** (15.2-17.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
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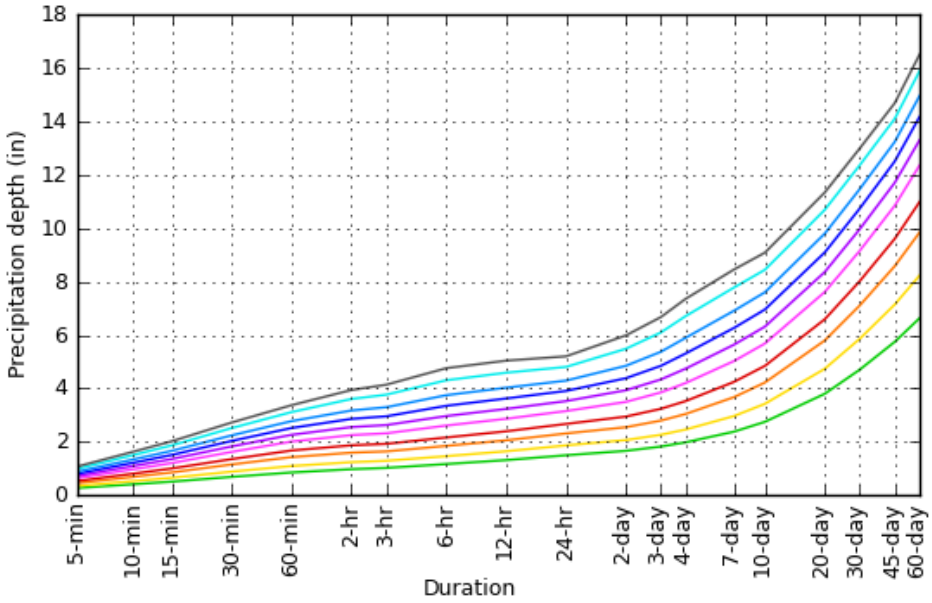

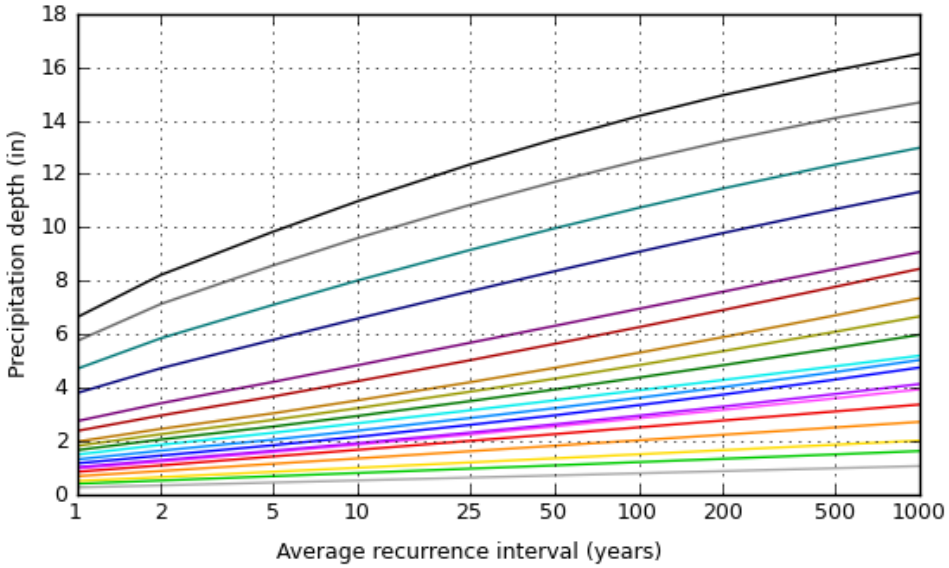

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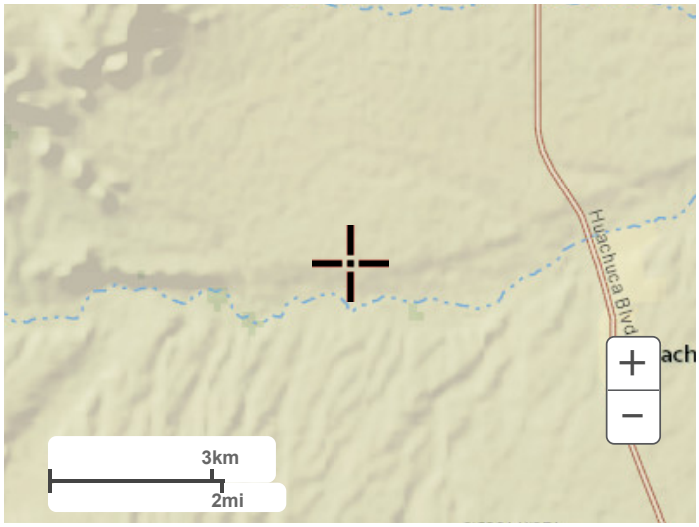
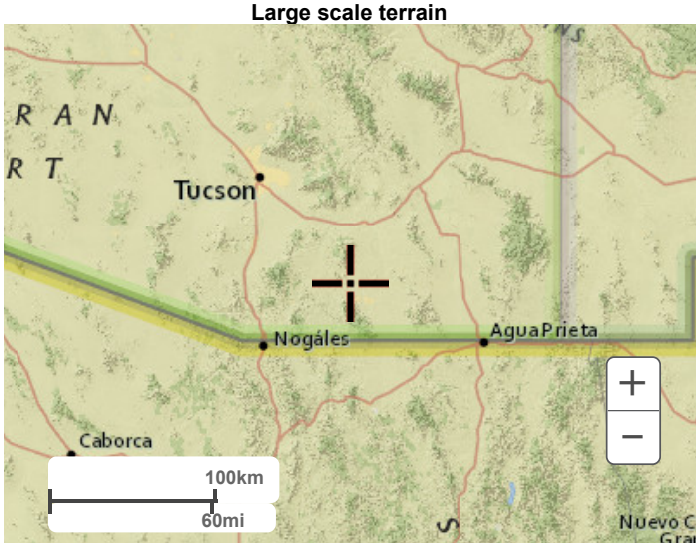
Maps & aerials

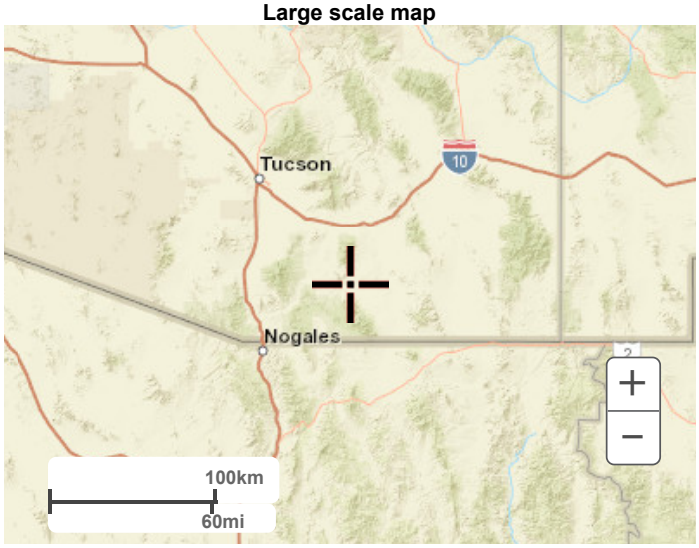
Small scale terrain



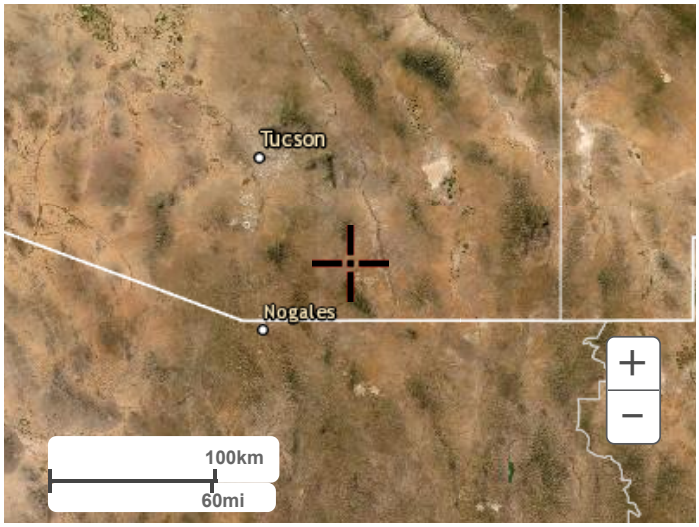
Large scale terrain



Large scale map



Large scale aerial



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National Weather Service
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1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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NOAA Atlas 14, Volume 1, Version 5
Location name: Elgin, Arizona, USA*
Latitude: 31.5215°, Longitude: -110.4269°
Elevation: 7365.22 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.353** (0.312-0.400)	**0.452** (0.399-0.513)	**0.587** (0.515-0.663)	**0.684** (0.599-0.771)	**0.810** (0.705-0.914)	**0.903** (0.780-1.02)	**0.994** (0.851-1.13)	**1.08** (0.919-1.24)	**1.20** (0.999-1.38)	**1.29** (1.06-1.51)
10-min	**0.536** (0.475-0.609)	**0.688** (0.608-0.781)	**0.893** (0.784-1.01)	**1.04** (0.912-1.17)	**1.23** (1.07-1.39)	**1.37** (1.19-1.56)	**1.51** (1.30-1.72)	**1.65** (1.40-1.88)	**1.83** (1.52-2.11)	**1.96** (1.61-2.29)
15-min	**0.665** (0.588-0.756)	**0.853** (0.753-0.968)	**1.11** (0.972-1.25)	**1.29** (1.13-1.45)	**1.53** (1.33-1.72)	**1.70** (1.47-1.93)	**1.88** (1.61-2.13)	**2.05** (1.73-2.34)	**2.26** (1.88-2.61)	**2.43** (2.00-2.84)
30-min	**0.895** (0.792-1.02)	**1.15** (1.01-1.30)	**1.49** (1.31-1.68)	**1.74** (1.52-1.96)	**2.06** (1.79-2.32)	**2.29** (1.98-2.60)	**2.53** (2.16-2.87)	**2.75** (2.33-3.14)	**3.05** (2.54-3.51)	**3.28** (2.69-3.83)
60-min	**1.11** (0.980-1.26)	**1.42** (1.25-1.61)	**1.84** (1.62-2.08)	**2.15** (1.88-2.42)	**2.55** (2.22-2.87)	**2.84** (2.45-3.21)	**3.13** (2.68-3.55)	**3.41** (2.89-3.89)	**3.77** (3.14-4.35)	**4.05** (3.33-4.73)
2-hr	**1.23** (1.09-1.39)	**1.57** (1.39-1.77)	**2.01** (1.78-2.26)	**2.35** (2.07-2.65)	**2.83** (2.47-3.18)	**3.19** (2.77-3.60)	**3.57** (3.06-4.04)	**3.95** (3.34-4.50)	**4.46** (3.71-5.13)	**4.87** (3.98-5.65)
3-hr	**1.30** (1.16-1.46)	**1.63** (1.46-1.84)	**2.07** (1.84-2.32)	**2.42** (2.15-2.72)	**2.91** (2.56-3.26)	**3.30** (2.87-3.71)	**3.70** (3.18-4.18)	**4.12** (3.49-4.68)	**4.69** (3.88-5.38)	**5.14** (4.18-5.98)
6-hr	**1.48** (1.31-1.67)	**1.85** (1.65-2.09)	**2.32** (2.06-2.62)	**2.72** (2.40-3.06)	**3.28** (2.87-3.69)	**3.72** (3.22-4.20)	**4.20** (3.59-4.76)	**4.70** (3.94-5.35)	**5.38** (4.41-6.19)	**5.93** (4.77-6.90)
12-hr	**1.69** (1.51-1.90)	**2.11** (1.88-2.37)	**2.63** (2.34-2.96)	**3.07** (2.71-3.44)	**3.68** (3.22-4.12)	**4.16** (3.61-4.68)	**4.68** (4.00-5.29)	**5.21** (4.39-5.93)	**5.94** (4.91-6.85)	**6.53** (5.29-7.60)
24-hr	**1.82** (1.68-1.97)	**2.27** (2.10-2.46)	**2.82** (2.60-3.06)	**3.26** (2.99-3.53)	**3.86** (3.53-4.18)	**4.32** (3.93-4.71)	**4.79** (4.34-5.34)	**5.27** (4.75-5.99)	**6.00** (5.28-6.92)	**6.59** (5.68-7.68)
2-day	**2.10** (1.94-2.28)	**2.61** (2.42-2.84)	**3.24** (3.00-3.52)	**3.77** (3.48-4.10)	**4.50** (4.12-4.89)	**5.09** (4.63-5.53)	**5.70** (5.15-6.21)	**6.34** (5.68-6.94)	**7.23** (6.39-7.96)	**7.93** (6.93-8.78)
3-day	**2.28** (2.11-2.47)	**2.84** (2.63-3.08)	**3.53** (3.26-3.83)	**4.11** (3.78-4.46)	**4.91** (4.50-5.33)	**5.56** (5.06-6.05)	**6.25** (5.64-6.80)	**6.96** (6.23-7.61)	**7.95** (7.02-8.75)	**8.74** (7.63-9.68)
4-day	**2.45** (2.27-2.66)	**3.06** (2.84-3.32)	**3.81** (3.52-4.14)	**4.44** (4.09-4.82)	**5.32** (4.88-5.78)	**6.04** (5.49-6.56)	**6.79** (6.13-7.40)	**7.57** (6.78-8.28)	**8.67** (7.65-9.54)	**9.55** (8.33-10.6)
7-day	**2.95** (2.73-3.19)	**3.68** (3.41-3.99)	**4.60** (4.25-4.98)	**5.35** (4.93-5.79)	**6.37** (5.84-6.90)	**7.19** (6.55-7.80)	**8.03** (7.27-8.73)	**8.90** (8.00-9.71)	**10.1** (8.96-11.1)	**11.0** (9.70-12.2)
10-day	**3.43** (3.19-3.70)	**4.29** (3.99-4.63)	**5.32** (4.94-5.73)	**6.14** (5.69-6.61)	**7.24** (6.67-7.80)	**8.08** (7.41-8.73)	**8.95** (8.15-9.69)	**9.82** (8.89-10.7)	**11.0** (9.83-12.0)	**11.9** (10.5-13.1)
20-day	**4.82** (4.48-5.18)	**6.02** (5.60-6.49)	**7.40** (6.87-7.97)	**8.44** (7.82-9.09)	**9.78** (9.04-10.5)	**10.8** (9.93-11.6)	**11.8** (10.8-12.7)	**12.7** (11.6-13.8)	**14.0** (12.6-15.2)	**14.9** (13.4-16.3)
30-day	**6.11** (5.68-6.58)	**7.64** (7.09-8.23)	**9.31** (8.64-10.0)	**10.5** (9.79-11.4)	**12.1** (11.2-13.0)	**13.2** (12.2-14.3)	**14.3** (13.2-15.5)	**15.4** (14.1-16.6)	**16.7** (15.2-18.1)	**17.6** (15.9-19.3)
45-day	**7.61** (7.09-8.16)	**9.49** (8.83-10.2)	**11.4** (10.6-12.3)	**12.9** (11.9-13.8)	**14.6** (13.6-15.7)	**15.9** (14.7-17.1)	**17.1** (15.7-18.5)	**18.2** (16.7-19.7)	**19.6** (17.9-21.4)	**20.7** (18.7-22.6)
60-day	**8.85** (8.25-9.47)	**11.0** (10.3-11.8)	**13.3** (12.4-14.2)	**14.8** (13.8-15.9)	**16.8** (15.6-18.0)	**18.1** (16.8-19.5)	**19.4** (17.9-20.9)	**20.6** (19.0-22.3)	**22.1** (20.2-24.0)	**23.2** (21.1-25.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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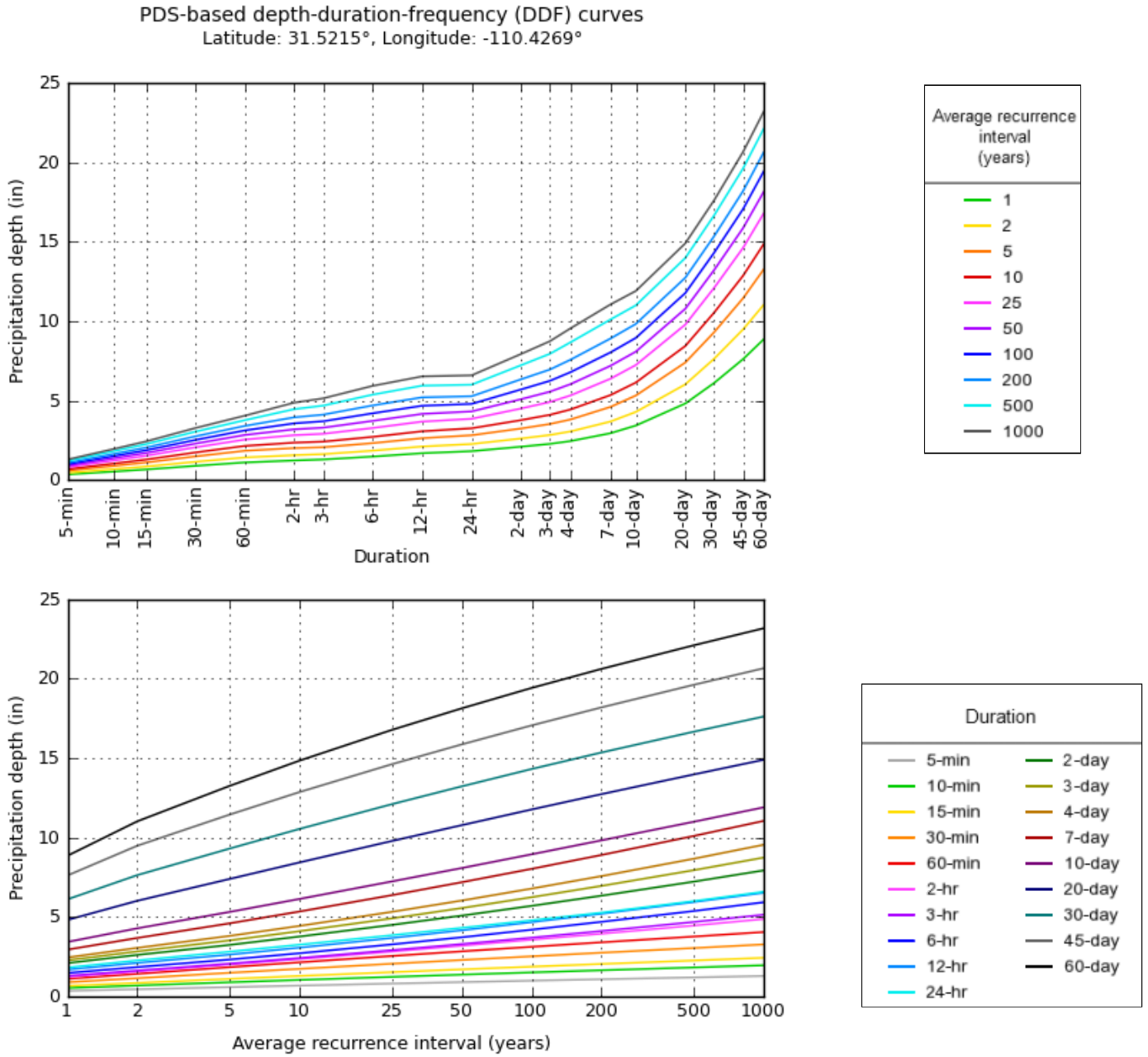
PF graphical



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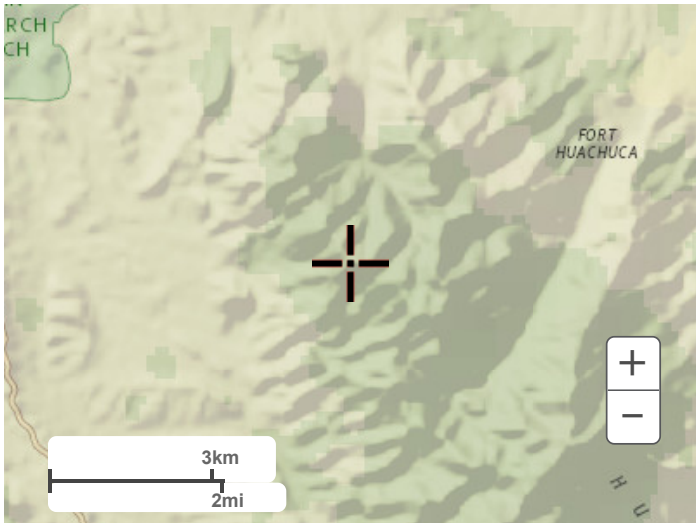
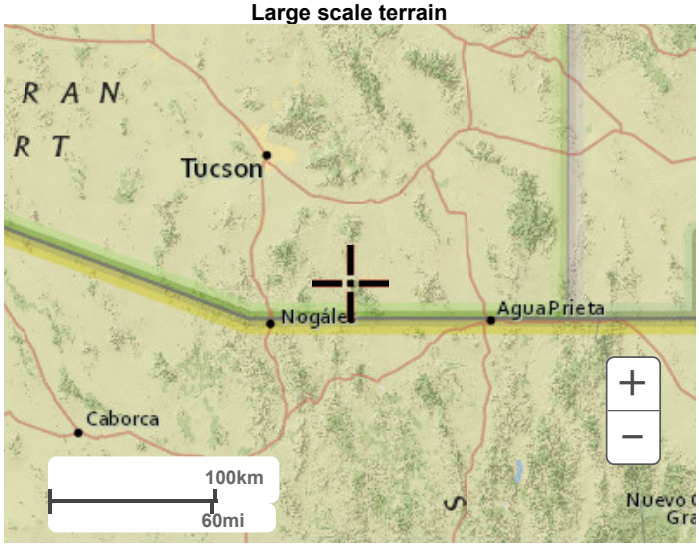
Maps & aerials

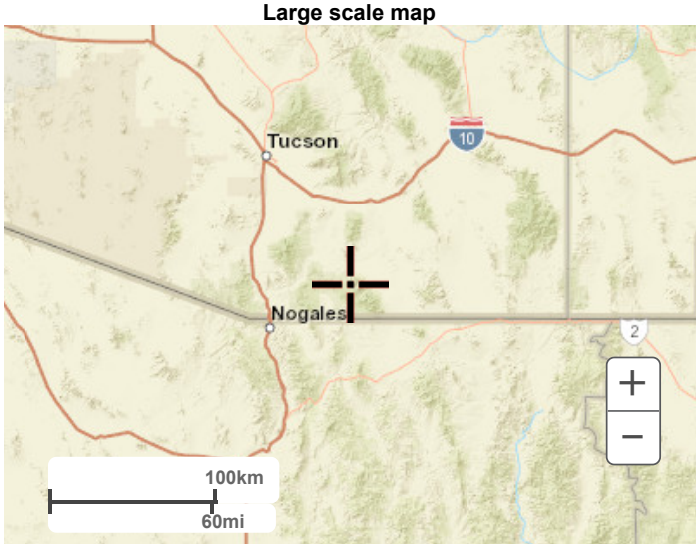
Small scale terrain



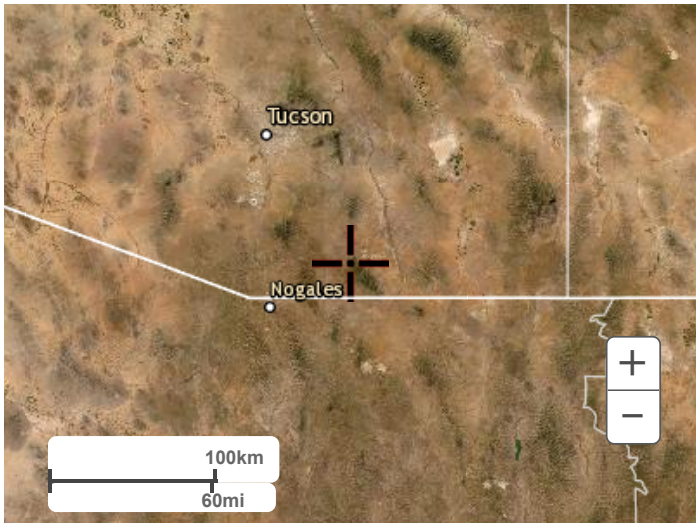
Large scale terrain



Large scale map



Large scale aerial



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Appendix B

Curve Number Table

Table 2. Semi-Arid Curve Numbers (adapted from NEH 630)

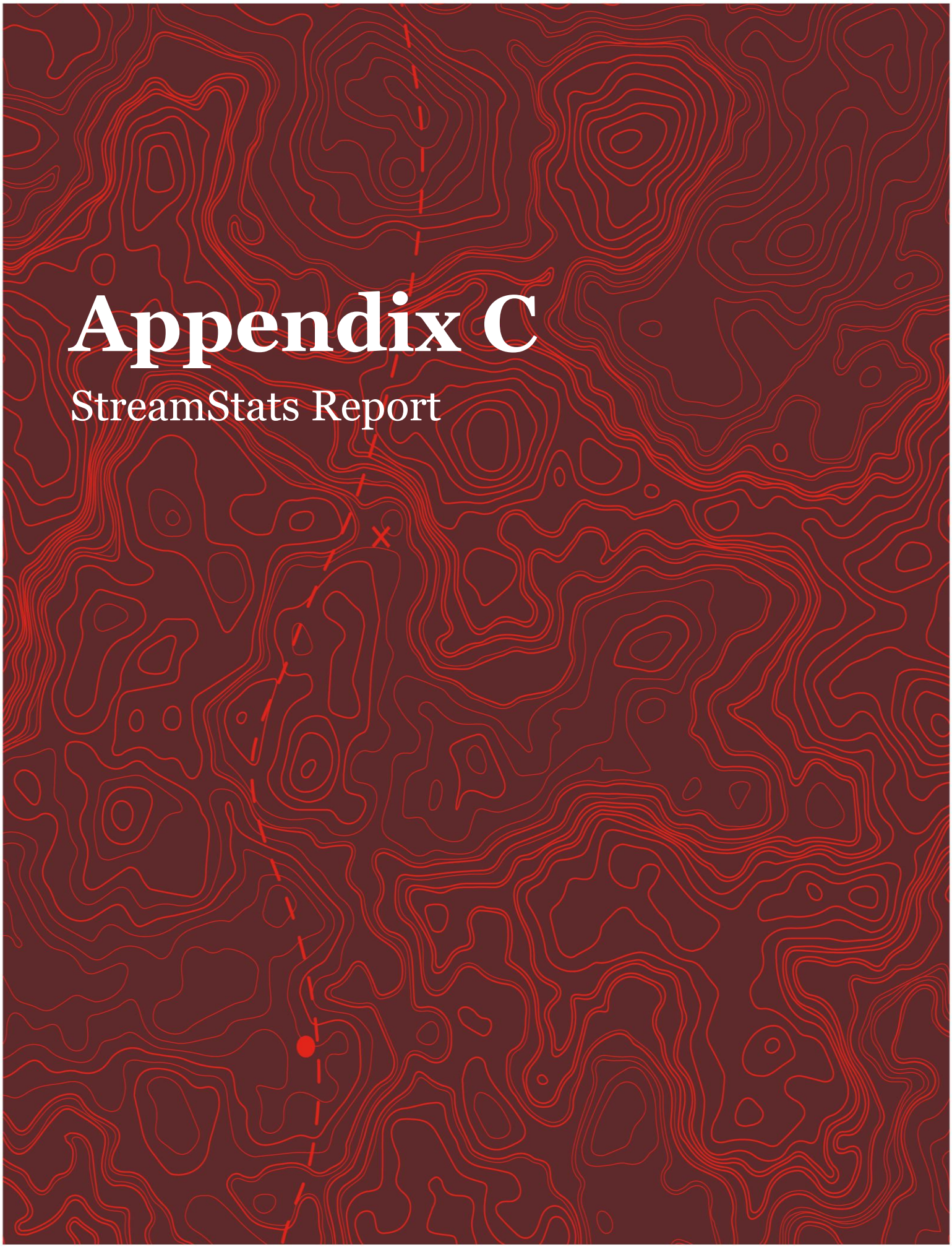
Class	Value	Classification Description	Curve Number				
			Soil Type*				
			A	B	C	D	W
Water	11	Open Water - areas of open water, generally with less than 25% cover of vegetation or soil.	98	98	98	98	100
	12	Perennial Ice/Snow - areas characterized by a perennial cover of ice and/or snow, generally greater than 25% of total cover.	98	98	98	98	100
Developed	21	Developed, Open Space - areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.	46	65	77	82	100
	22	Developed, Low Intensity - areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.	61	75	83	87	100
	23	Developed, Medium Intensity – areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.	77	85	90	95	100
	24	Developed High Intensity -highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.	89	92	94	95	100
Barren	31	Barren Land (Rock/Sand/Clay) - areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.	77	86	91	94	100
Forest	41	Deciduous Forest - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.	43	55	70	77	100
	42	Evergreen Forest - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.	43	55	70	77	100
	43	Mixed Forest - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.	43	55	70	77	100
Shrubland	51	Dwarf Scrub - Alaska only areas dominated by shrubs less than 20 centimeters tall with shrub canopy typically greater than 20% of total vegetation. This type is often co-associated with grasses, sedges, herbs, and non-vascular vegetation.	55	71	81	89	100
	52	Shrub/Scrub - areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.	55	71	81	89	100
Herbaceous	71	Grassland/Herbaceous - areas dominated by gramanoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.	55	71	81	89	100
	72	Sedge/Herbaceous - Alaska only areas dominated by sedges and forbs, generally greater than 80% of total vegetation. This type can occur with significant other grasses or other grass like plants, and includes sedge tundra, and sedge tussock tundra.	55	71	81	89	100
	73	Lichens - Alaska only areas dominated by fruticose or foliose lichens generally greater than 80% of total vegetation.	55	71	81	89	100
	74	Moss - Alaska only areas dominated by mosses, generally greater than 80% of total vegetation.	55	71	81	89	100
Planted/Cultivated	81	Pasture/Hay – areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.	55	71	81	89	100
	82	Cultivated Crops – areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.	67	78	85	89	100
	83	Small Grains	63	75	83	87	100
Wetlands	91	Woody Wetlands - areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.	45	66	77	83	100
	92	Emergent Herbaceous Wetlands - Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.	45	66	77	83	100

*A/D, B/D and C/D soils lumped as D soils, W denotes water

**Curve Numbers for NLCD Codes 41-43 have been increased from 30 to 43 as many of these areas are partially grazed Woods-grass combination.

Appendix C

StreamStats Report



StreamStats Report

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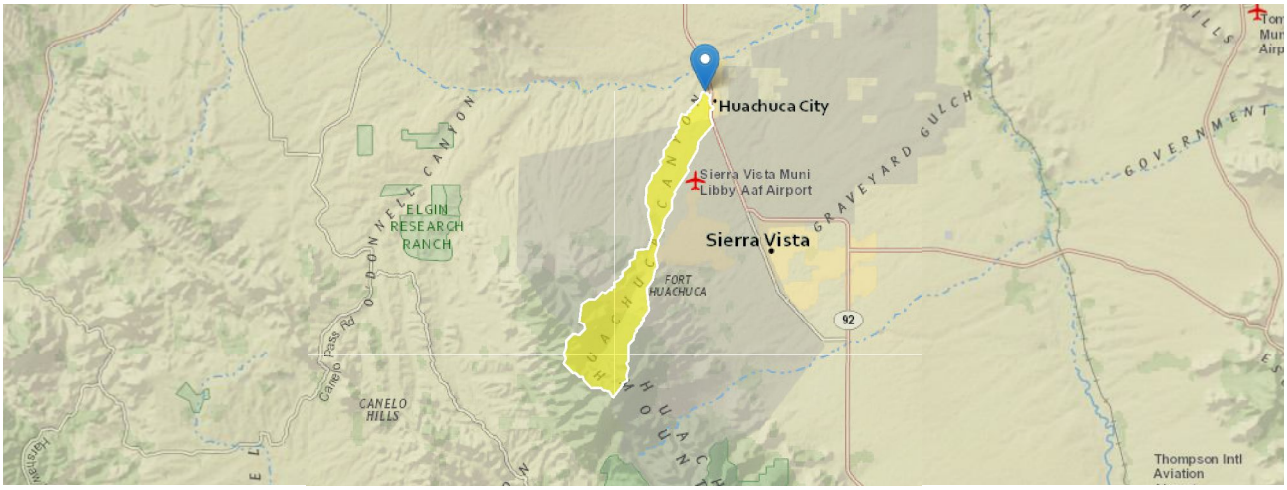
Time: 2020-08-17 09:50:17 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	11.93	square miles
ELEV	Mean Basin Elevation	5762.927	feet

Peak-Flow Statistics Parameters[Peak Region 5 SE Basin Range 2014 5211]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	11.93	square miles	0.155	2925
ELEV	Mean Basin Elevation	5762.927	feet		

Peak-Flow Statistics Flow Report[Peak Region 5 SE Basin Range 2014 5211]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp
2 Year Peak Flood	383	ft^3/s	107	1370	86.6
5 Year Peak Flood	983	ft^3/s	374	2590	61.5
10 Year Peak Flood	1600	ft^3/s	688	3720	52.4
25 Year Peak Flood	2650	ft^3/s	1250	5620	45.8
50 Year Peak Flood	3700	ft^3/s	1800	7590	43.5
100 Year Peak Flood	4950	ft^3/s	2440	NaN	42.6
200 Year Peak Flood	6340	ft^3/s	3130	12900	42.4
500 Year Peak Flood	8660	ft^3/s	4250	17600	43.2

Peak-Flow Statistics Citations

Paretti, N.V., Kennedy, J.R., Turney, L.A., and Veilleux, A.G.,2014, Methods for estimating magnitude and frequency of floods in Arizona, developed with unregulated and rural peak-flow data through water year 2010: U.S. Geological Survey Scientific Investigations Report 2014-5211, 61 p., http://dx.doi.org/10.3133/sir20145211. (http://pubs.usgs.gov/sir/2014/5211/)

StreamStats Report

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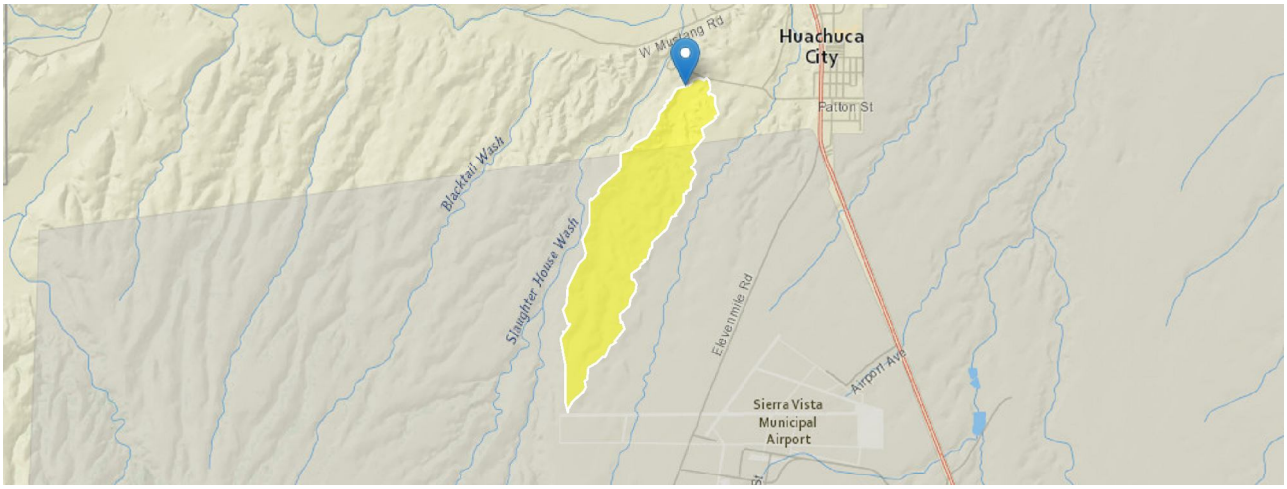

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	1.32	square miles
ELEV	Mean Basin Elevation	4523.031	feet

Peak-Flow Statistics Parameters[Peak Region 5 SE Basin Range 2014 5211]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	1.32	square miles	0.155	2925
ELEV	Mean Basin Elevation	4523.031	feet		

Peak-Flow Statistics Flow Report[Peak Region 5 SE Basin Range 2014 5211]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp
2 Year Peak Flood	112	ft^3/s	24.7	508	86.6
5 Year Peak Flood	275	ft^3/s	94.7	798	61.5
10 Year Peak Flood	436	ft^3/s	175	1080	52.4
25 Year Peak Flood	706	ft^3/s	317	1570	45.8
50 Year Peak Flood	966	ft^3/s	454	2050	43.5
100 Year Peak Flood	1270	ft^3/s	611	2640	42.6
200 Year Peak Flood	1620	ft^3/s	778	3370	42.4
500 Year Peak Flood	2170	ft^3/s	1050	4490	43.2

Peak-Flow Statistics Citations

Paretti, N.V., Kennedy, J.R., Turney, L.A., and Veilleux, A.G.,2014, Methods for estimating magnitude and frequency of floods in Arizona, developed with unregulated and rural peak-flow data through water year 2010: U.S. Geological Survey Scientific Investigations Report 2014-5211, 61 p., http://dx.doi.org/10.3133/sir20145211. (http://pubs.usgs.gov/sir/2014/5211/)

StreamStats Report

Region ID: AZ
Workspace ID: AZ20200817153505341000
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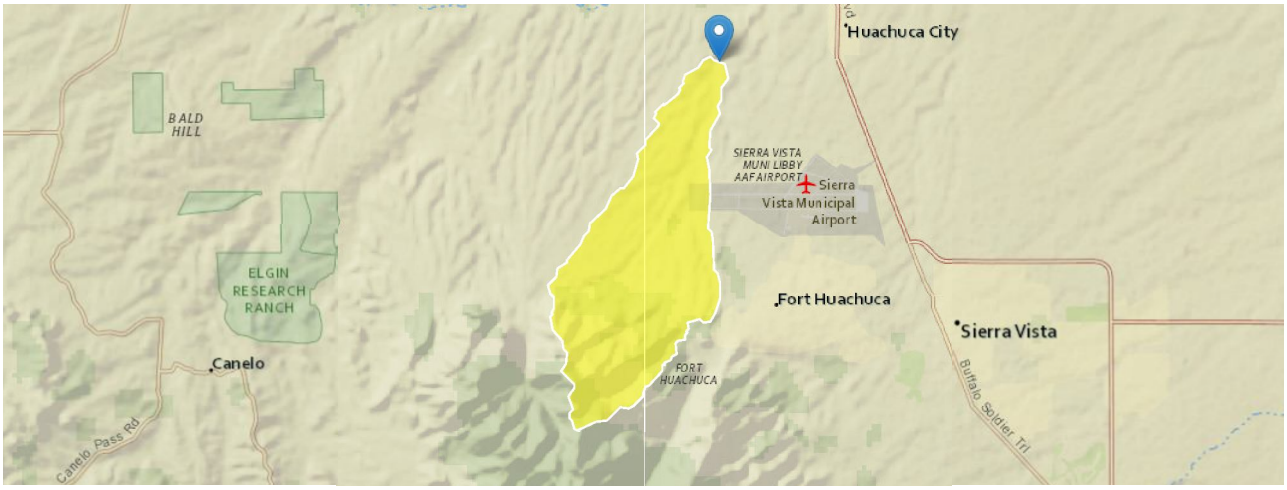
Time: 2020-08-17 10:35:25 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	9.89	square miles
ELEV	Mean Basin Elevation	5144.587	feet

Peak-Flow Statistics Parameters[Peak Region 5 SE Basin Range 2014 5211]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	9.89	square miles	0.155	2925
ELEV	Mean Basin Elevation	5144.587	feet		

Peak-Flow Statistics Flow Report[Peak Region 5 SE Basin Range 2014 5211]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

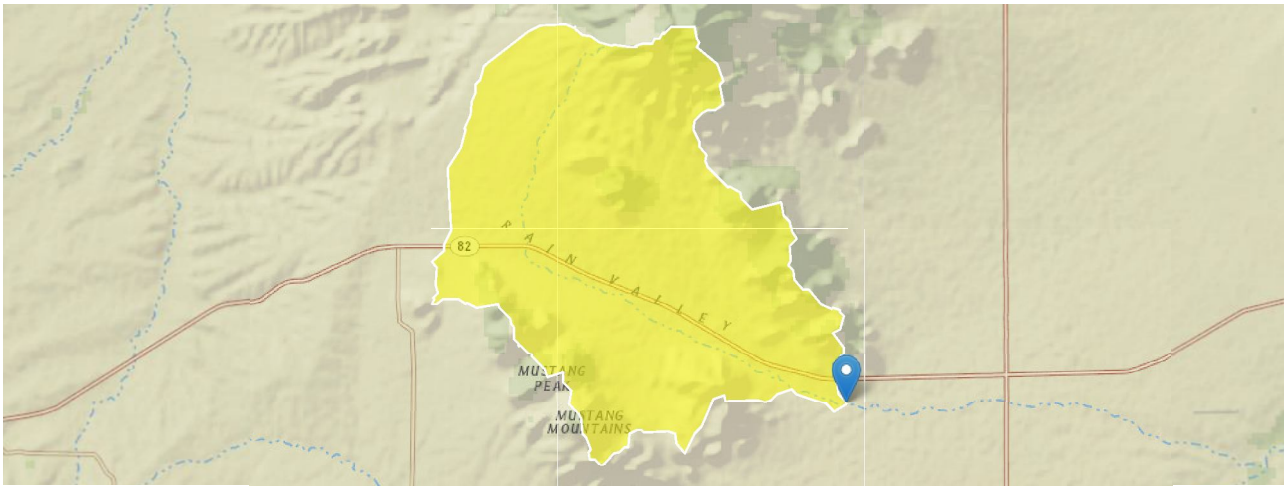
Statistic	Value	Unit	PII	PIu	SEp
2 Year Peak Flood	347	ft^3/s	98.7	1220	86.6
5 Year Peak Flood	890	ft^3/s	343	2310	61.5
10 Year Peak Flood	1440	ft^3/s	627	3310	52.4
25 Year Peak Flood	2400	ft^3/s	1150	5020	45.8
50 Year Peak Flood	3340	ft^3/s	1650	6770	43.5
100 Year Peak Flood	4470	ft^3/s	2230	8950	42.6
200 Year Peak Flood	5720	ft^3/s	2860	11400	42.4
500 Year Peak Flood	7810	ft^3/s	3890	15700	43.2

Peak-Flow Statistics Citations

Paretti, N.V., Kennedy, J.R., Turney, L.A., and Veilleux, A.G.,2014, Methods for estimating magnitude and frequency of floods in Arizona, developed with unregulated and rural peak-flow data through water year 2010: U.S. Geological Survey Scientific Investigations Report 2014-5211, 61 p., http://dx.doi.org/10.3133/sir20145211. (http://pubs.usgs.gov/sir/2014/5211/)

StreamStats Report

Region ID:	AZ
Workspace ID:	AZ20200817143015150000
Clicked Point (Latitude, Longitude):	31.68582, -110.39608
Time:	2020-08-17 09:30:33 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	31.1	square miles
ELEV	Mean Basin Elevation	5121.982	feet

Peak-Flow Statistics Parameters[Peak Region 5 SE Basin Range 2014 5211]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	31.1	square miles	0.155	2925
ELEV	Mean Basin Elevation	5121.982	feet		

Peak-Flow Statistics Flow Report[Peak Region 5 SE Basin Range 2014 5211]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

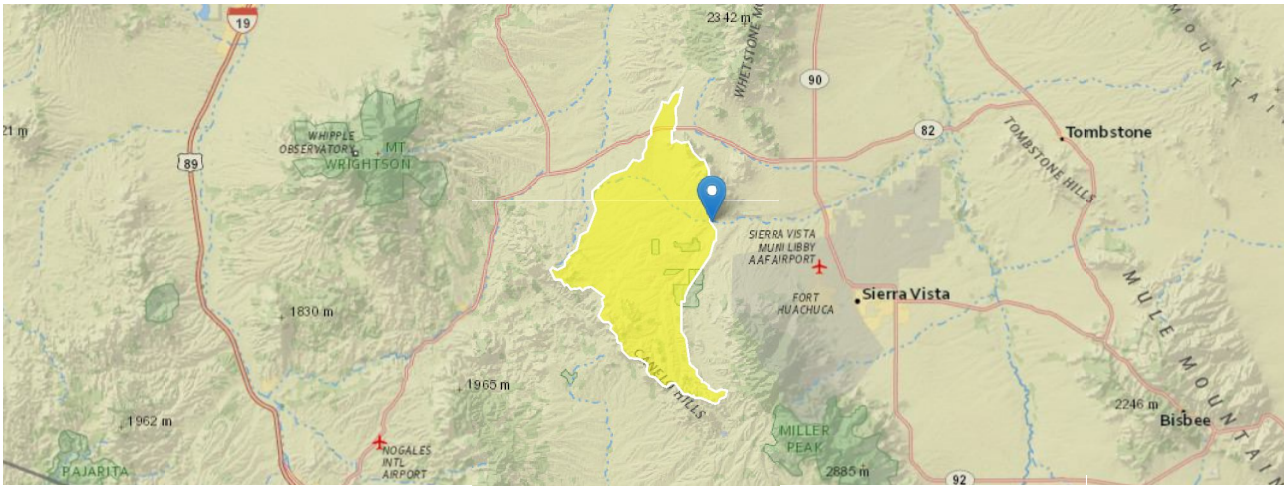
Statistic	Value	Unit	PII	PIu	SEp
2 Year Peak Flood	623	ft^3/s	141	2750	86.6
5 Year Peak Flood	1600	ft^3/s	536	4780	61.5
10 Year Peak Flood	2610	ft^3/s	1010	6780	52.4
25 Year Peak Flood	4330	ft^3/s	1840	10200	45.8
50 Year Peak Flood	6040	ft^3/s	2660	13700	43.5
100 Year Peak Flood	8080	ft^3/s	3610	18100	42.6
200 Year Peak Flood	10300	ft^3/s	4570	23200	42.4
500 Year Peak Flood	14100	ft^3/s	6220	31900	43.2

Peak-Flow Statistics Citations

Paretti, N.V., Kennedy, J.R., Turney, L.A., and Veilleux, A.G.,2014, Methods for estimating magnitude and frequency of floods in Arizona, developed with unregulated and rural peak-flow data through water year 2010: U.S. Geological Survey Scientific Investigations Report 2014-5211, 61 p., http://dx.doi.org/10.3133/sir20145211. (http://pubs.usgs.gov/sir/2014/5211/)

StreamStats Report

Region ID: AZ
Workspace ID: AZ20200817135759342000
Clicked Point (Latitude, Longitude): 31.63168, -110.46929
Time: 2020-08-17 08:58:19 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	109.9	square miles
ELEV	Mean Basin Elevation	5062.27	feet

Peak-Flow Statistics Parameters[Peak Region 5 SE Basin Range 2014 5211]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	109.9	square miles	0.155	2925
ELEV	Mean Basin Elevation	5062.27	feet		

Peak-Flow Statistics Flow Report[Peak Region 5 SE Basin Range 2014 5211]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp
2 Year Peak Flood	1130	ft^3/s	162	7870	86.6
5 Year Peak Flood	2890	ft^3/s	737	11300	61.5
10 Year Peak Flood	4680	ft^3/s	1430	15300	52.4
25 Year Peak Flood	7730	ft^3/s	2660	22500	45.8
50 Year Peak Flood	10700	ft^3/s	3860	29700	43.5
100 Year Peak Flood	14200	ft^3/s	5220	38600	42.6
200 Year Peak Flood	18200	ft^3/s	6580	50400	42.4
500 Year Peak Flood	24700	ft^3/s	8880	68700	43.2

Peak-Flow Statistics Citations

Paretti, N.V., Kennedy, J.R., Turney, L.A., and Veilleux, A.G.,2014, Methods for estimating magnitude and frequency of floods in Arizona, developed with unregulated and rural peak-flow data through water year 2010: U.S. Geological Survey Scientific Investigations Report 2014-5211, 61 p., http://dx.doi.org/10.3133/sir20145211. (http://pubs.usgs.gov/sir/2014/5211/)

Appendix D

FEMA FIRM Panels

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 12N. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1992 and 1997.

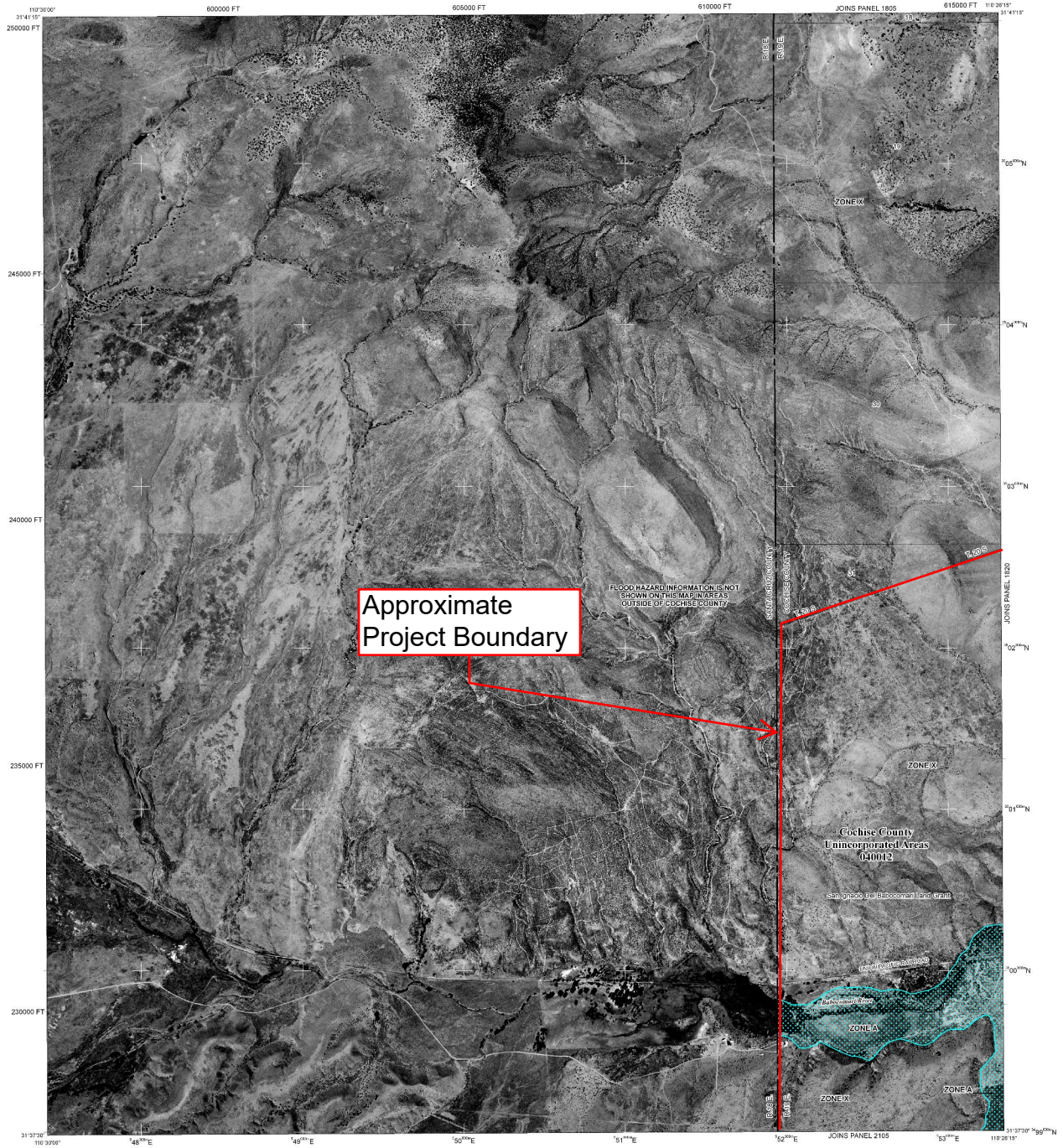
This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4276000 FT N — 1000-meter Universal Transverse Mercator grid values, zone 12N
- 600000 FT — 5000-foot grid ticks: Arizona State Plane coordinate system, East zone (FIPSZONE 0201), Transverse Mercator projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1815F

FIRM

FLOOD INSURANCE RATE MAP

COCHISE COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 1815 OF 3000
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCHISE COUNTY	040012	1815	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
04003C1815F

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

NOTES TO USERS

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NOAA, N/NGS12
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1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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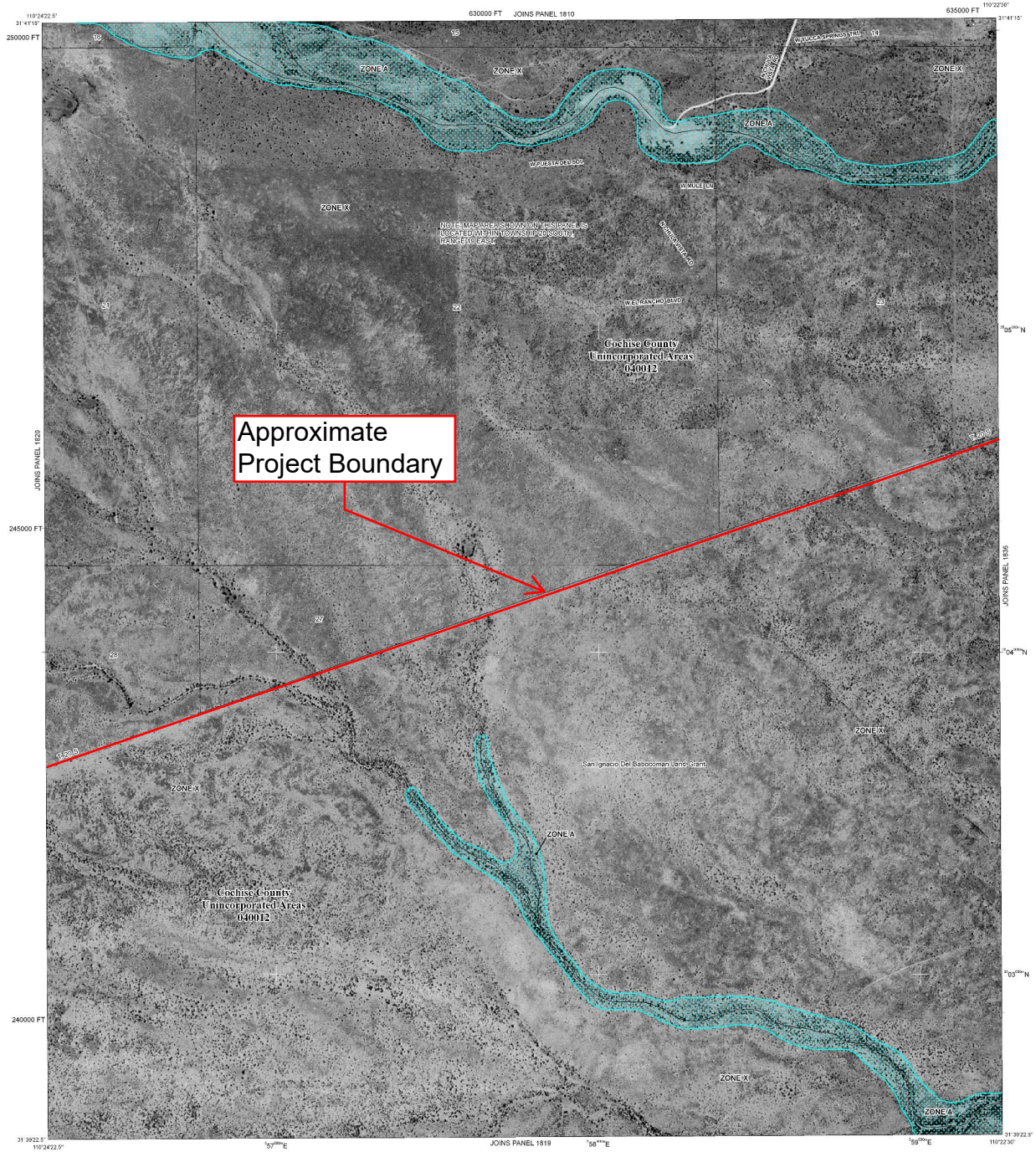

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- D — D — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4376000mN — 1000-meter Universal Transverse Mercator grid values, zone 12N
- 600000 FT — 5000-foot grid ticks: Arizona State Plane coordinate system, East zone (FIPSZONE 0201), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1817F

FIRM

FLOOD INSURANCE RATE MAP

COCHISE COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 1817 OF 3000

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCHISE COUNTY	040012	1817	F

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MAP NUMBER
04003C1817F

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 12N. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1992 and 1997.

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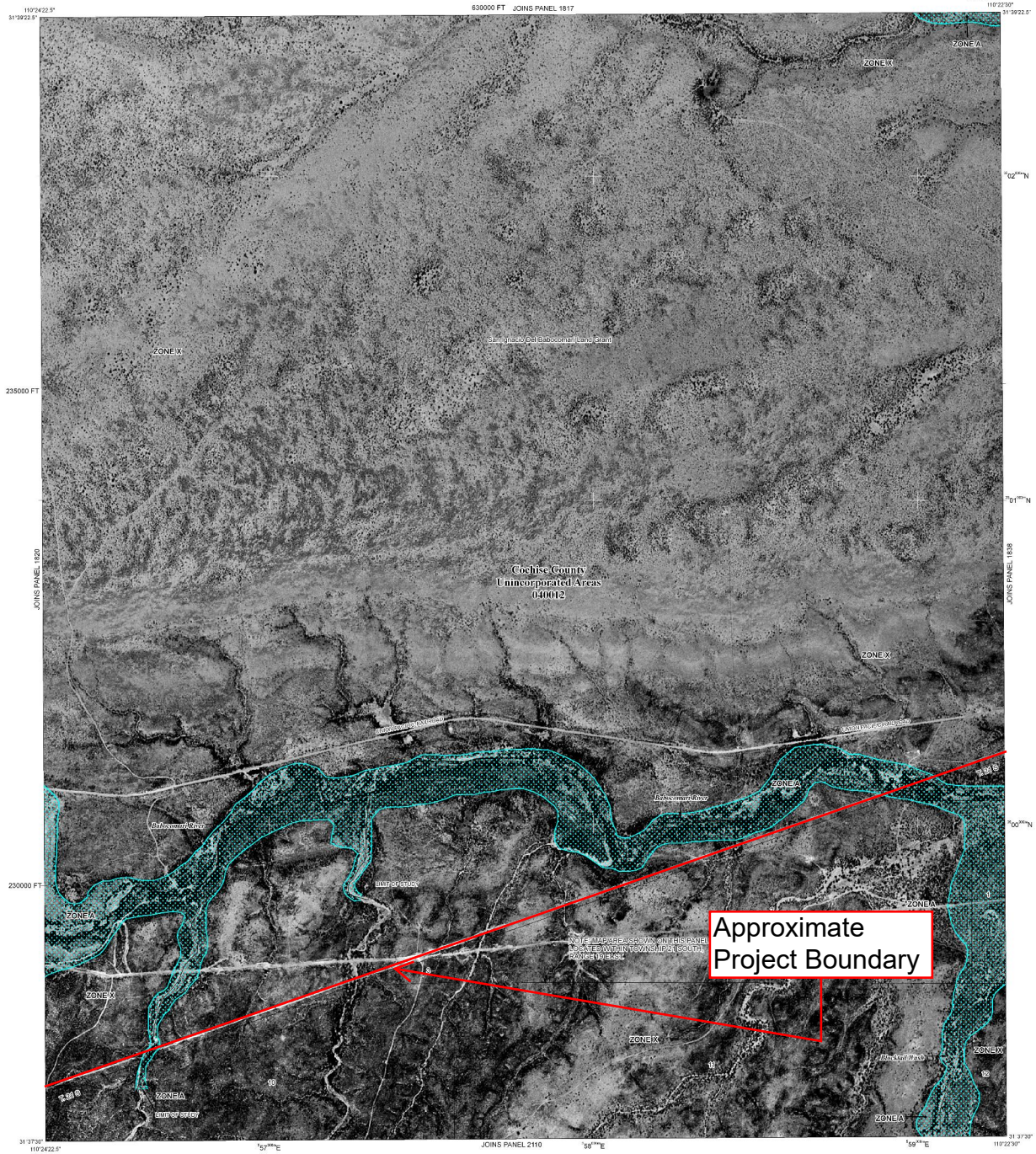
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- D — D — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- "76.000"N — 1000-meter Universal Transverse Mercator grid values, zone 12N
- 600000 FT — 5000-foot grid ticks: Arizona State Plane coordinate system, East zone (FIPSZONE 0201), Transverse Mercator projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1819F

FIRM

FLOOD INSURANCE RATE MAP

COCHISE COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 1819 OF 3000
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCHISE COUNTY	040012	1819	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
04003C1819F

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

NOTES TO USERS

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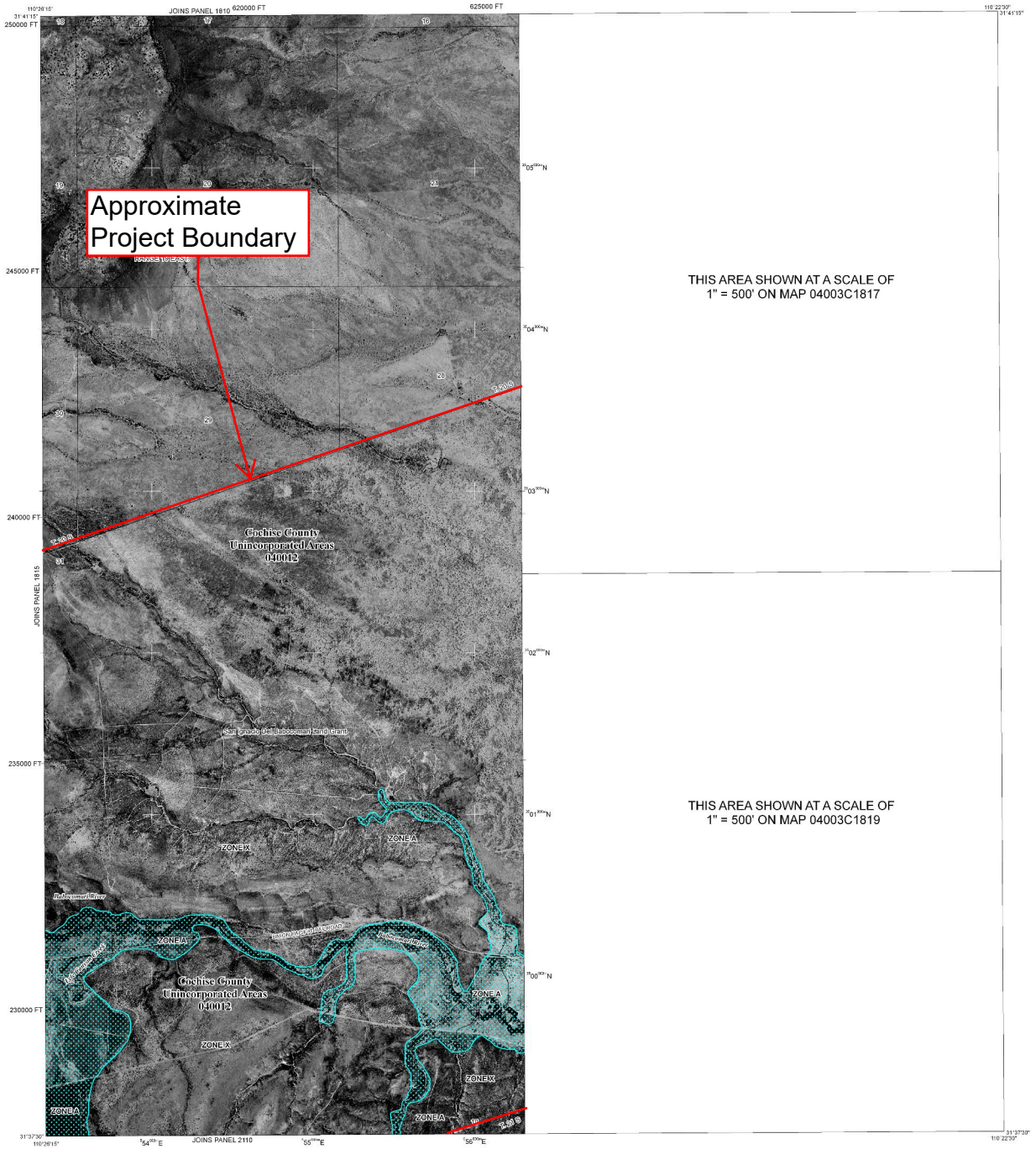

LEGEND

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ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A / B — B — Cross section line

Transect line

87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

4276000 mN — 1000-meter Universal Transverse Mercator grid values, zone 12N

600000 FT — 5000-foot grid ticks: Arizona State Plane coordinate system, East zone (FIPSZONE 0201), Transverse Mercator projection

DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)

● M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1820F

FIRM

FLOOD INSURANCE RATE MAP

COCHISE COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 1820 OF 3000
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCHISE COUNTY	040012	1820	F

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MAP NUMBER
04003C1820F

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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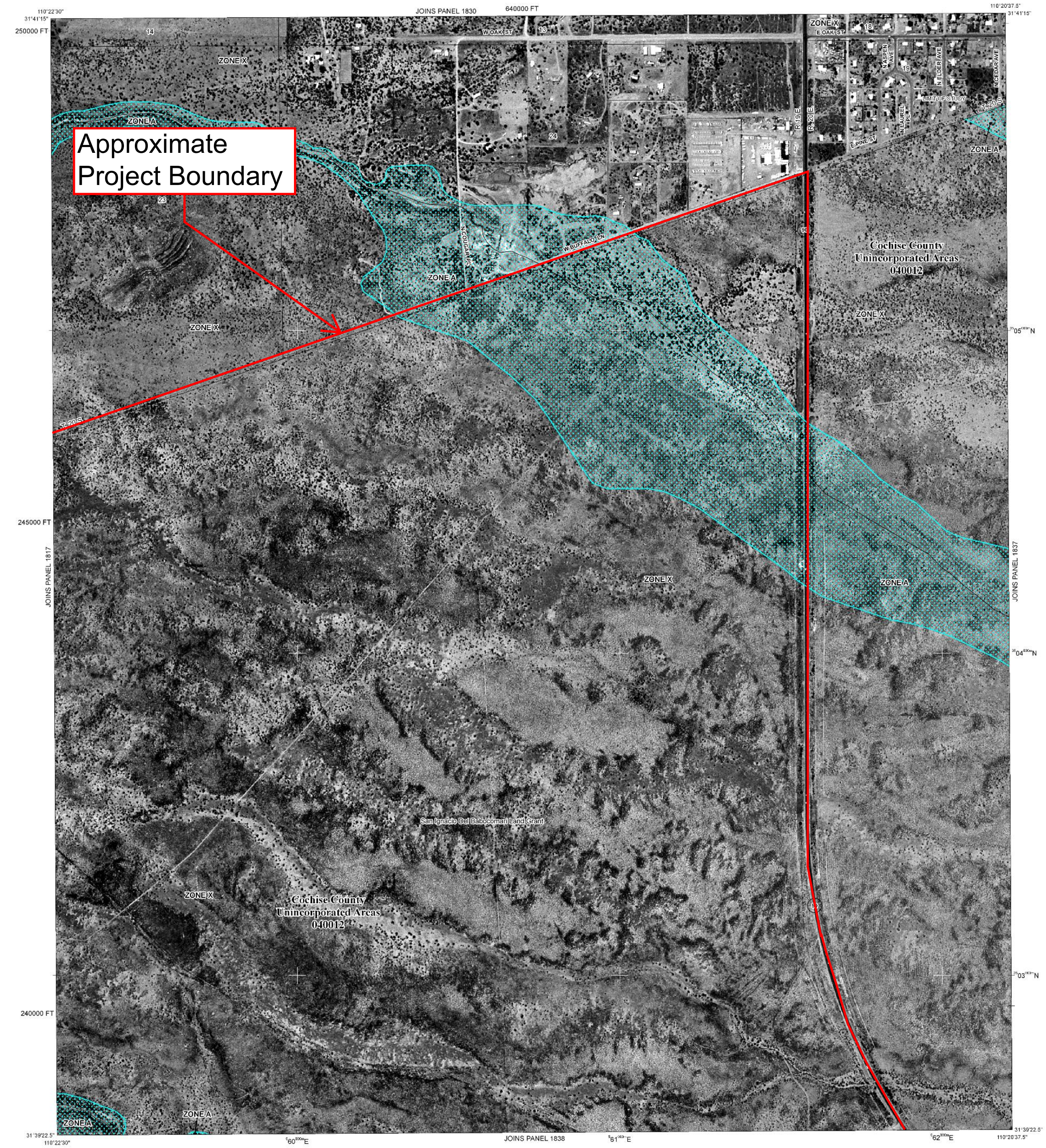

LEGEND

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ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

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1% annual chance floodplain boundary

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CBRS and OPA boundary

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~~~ 513 ~~~ Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)——(A) Cross section line

(23)- - - -(23) Transect line

87°07'45", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

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DX5510 × Bench mark (see explanation in Notes to Users section of this FIRM panel)

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MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1836F

FIRM

FLOOD INSURANCE RATE MAP

COCHISE COUNTY, ARIZONA
AND INCORPORATED AREAS

PANEL 1836 OF 3000

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCHISE COUNTY	040012	1836	F

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MAP NUMBER
04003C1836F

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency
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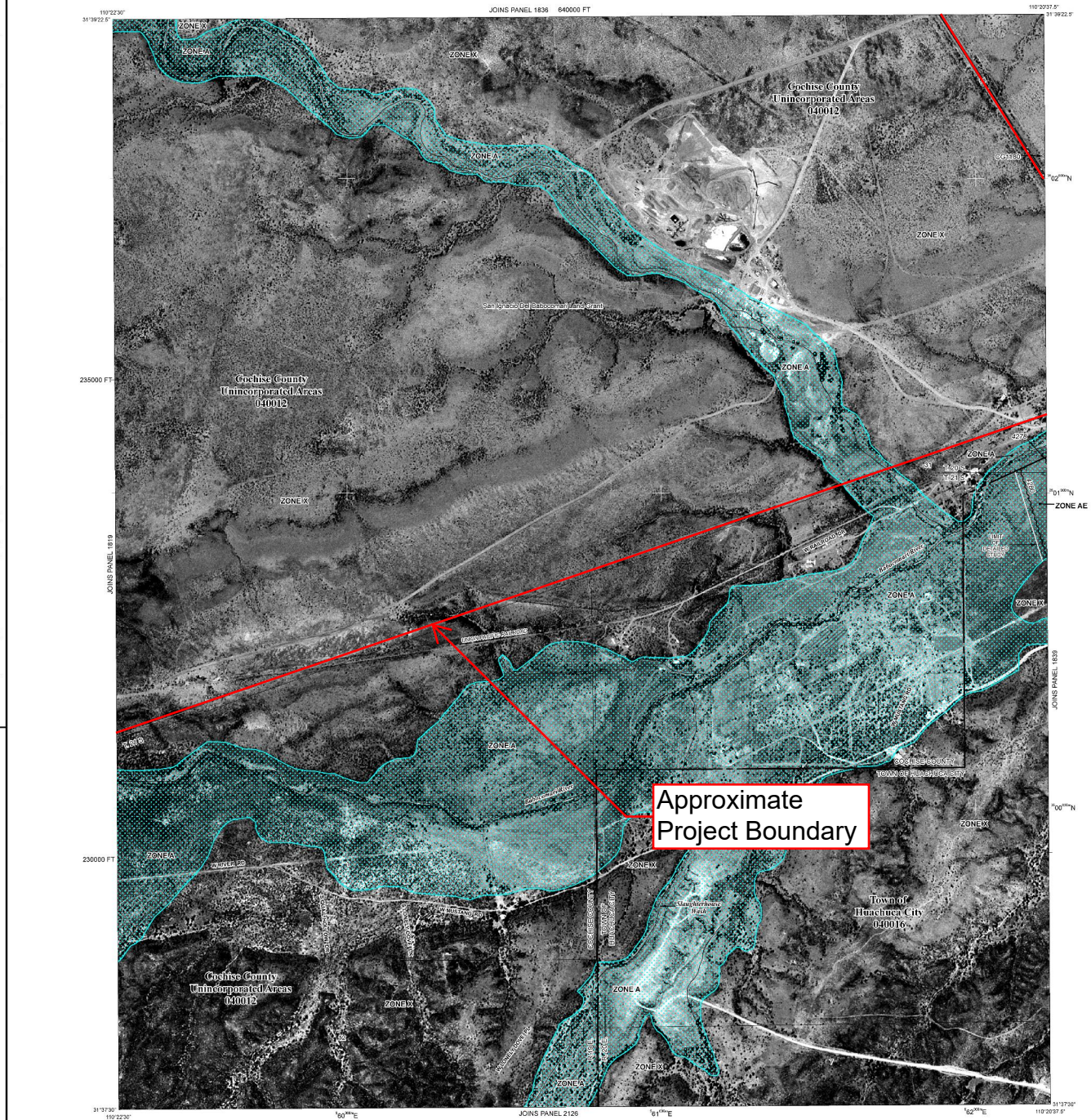

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, A1, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a Flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 (EL 987)	Base Flood Elevation line and value; elevation in feet*
	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
D — D	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000 mN	1000-meter Universal Transverse Mercator grid values, zone 12N
600000 FT	5000-foot grid ticks: Arizona State Plane coordinate system, East zone (FIPSZONE 0201), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1838F

FIRM

FLOOD INSURANCE RATE MAP

COCHISE COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 1838 OF 3000

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCHISE COUNTY	040012	1838	F
HUACHUCA CITY, TOWN OF	040016	1838	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
04003C1838F

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 12N. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
SSMC-3, #9202
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Silver Spring, Maryland 20910-3282
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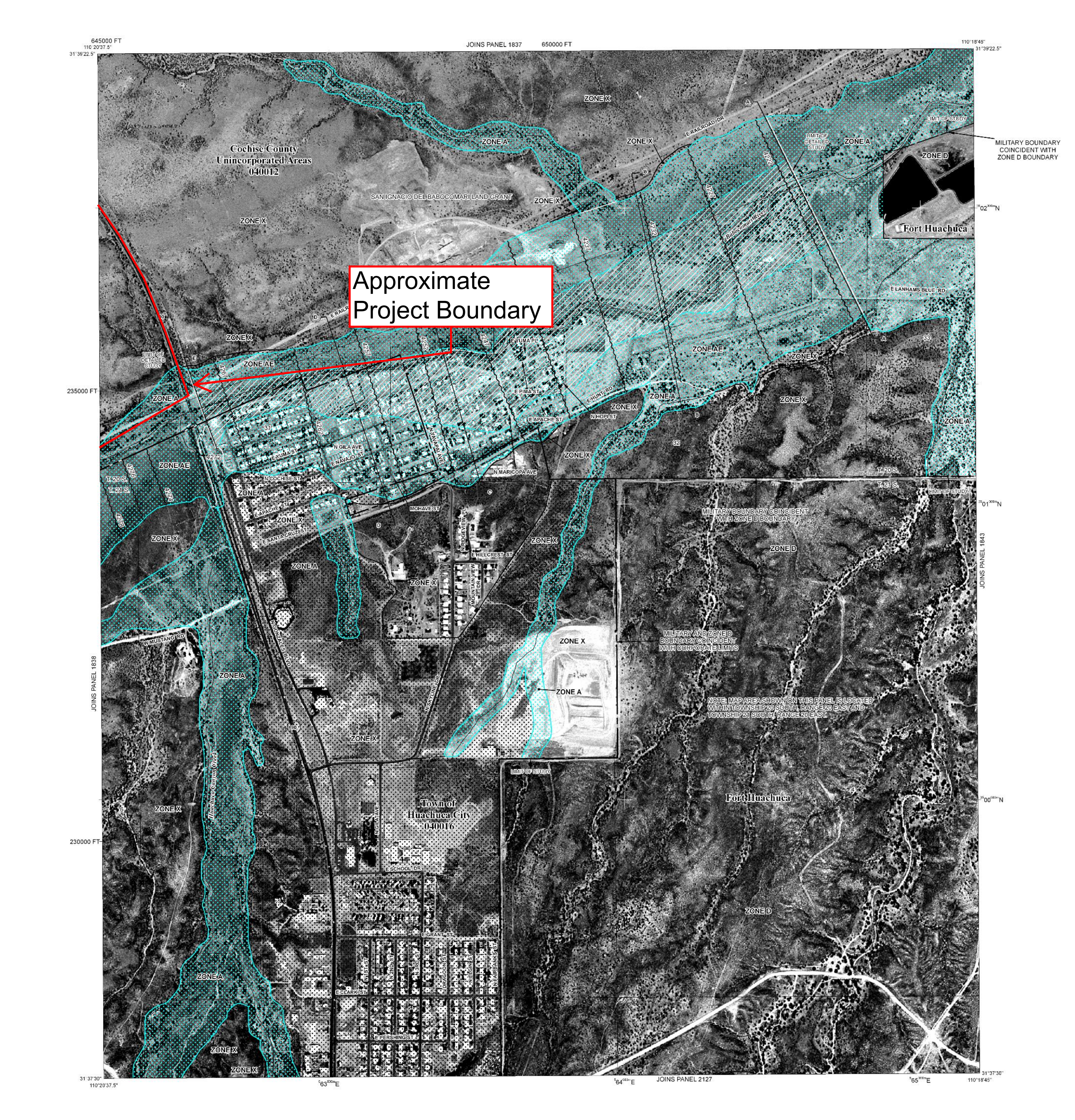

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)——(A)	Cross section line
(23)- - - -(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
76 N	1000-meter Universal Transverse Mercator grid values, zone 12N
600000 FT	5000-foot grid ticks: Arizona State Plane coordinate system, East zone (FIPSZONE 0201), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

PANEL 1839F

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

COCHISE COUNTY, ARIZONA
AND INCORPORATED AREAS

PANEL 1839 OF 3000
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCHISE COUNTY	040012	1839	F
HUACHUCA CITY, TOWN OF	040016	1839	F

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MAP NUMBER
04003C1839F

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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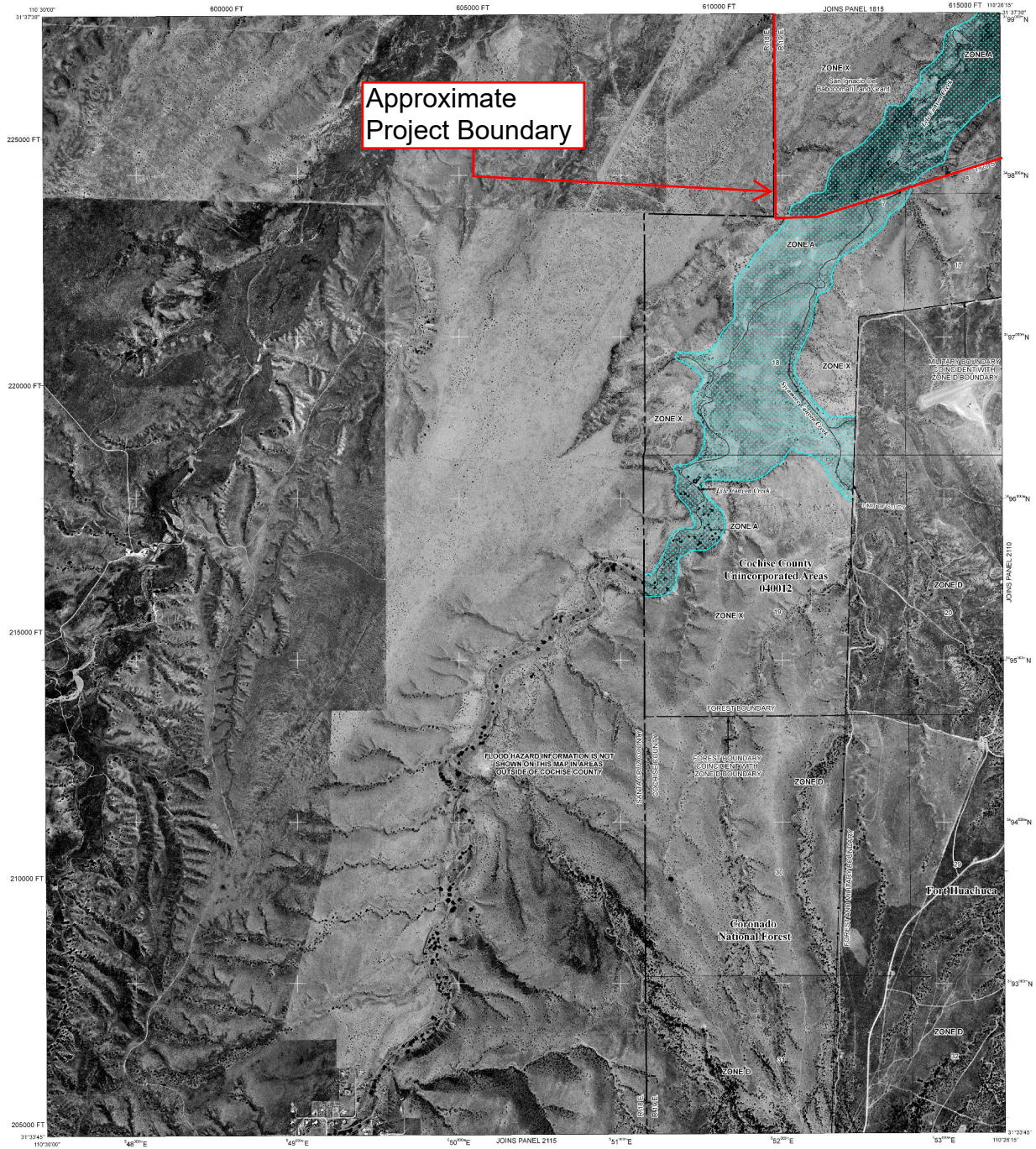

LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER AREAS

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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
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- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
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- M1.5 — River Mile

MAP REPOSITORY
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2105F

FIRM

FLOOD INSURANCE RATE MAP

COCHISE COUNTY, ARIZONA
AND INCORPORATED AREAS

PANEL 2105 OF 3000
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCHISE COUNTY	040012	2105	F

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04003C2105F

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Federal Emergency Management Agency

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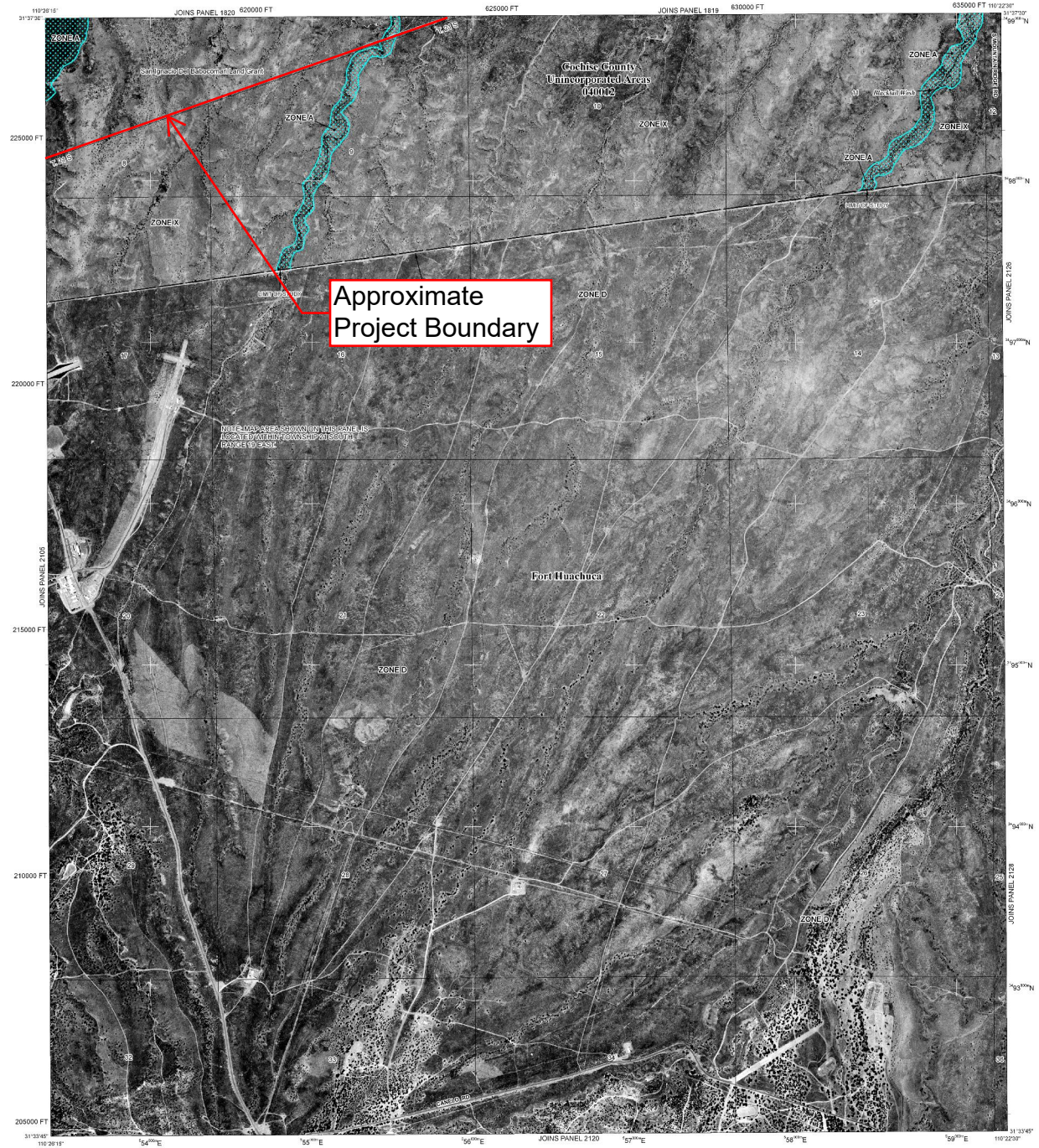
Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 (EL 987)	Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*
A — A	Cross section line
B — B	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276 000 mN	1000-meter Universal Transverse Mercator grid values, zone 12N
600000 FT	5000-foot grid ticks: Arizona State Plane coordinate system, East zone (FIPSZONE 0201), Transverse Mercator projection
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

* Referenced to the North American Vertical Datum of 1988

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2110F

FIRM
FLOOD INSURANCE RATE MAP

COCHISE COUNTY, ARIZONA
AND INCORPORATED AREAS

PANEL 2110 OF 3000
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COCHISE COUNTY	040012	2110	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
04003C2110F

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

Appendix E

Cochise County Floodplain Regulations

Cochise County Floodplain Regulations

Revised December, 2015

Cochise County Flood Control District

Table of Contents

SECTION 1
STATUTORY AUTHORIZATION, FINDINGS OF FACT, PURPOSE AND METHODS

1.1 STATUTORY AUTHORIZATION

In A.R.S. §§ 48-3601 through 48-3628, the Arizona State Legislature has delegated the responsibility to each county flood control district to adopt floodplain management regulations designed to promote the public health, safety and general welfare of its citizenry. Therefore, the Flood Control District Board of Directors of Cochise County, Arizona, does ordain as follows:

1.2 FINDINGS OF FACT

A. The flood hazard areas of Cochise County are subject to periodic inundation which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief and impairment of the tax base, all of which adversely affect the public health, safety and general welfare.

B. These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazards which increase flood heights and velocities and, when inadequately anchored, cause damage in other areas. Uses that are inadequately flood proofed, elevated or otherwise protected from flood damage, also contribute to the flood loss.

1.3 STATEMENT OF PURPOSE

It is the purpose of this ordinance to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

A. Protect human life and health;

B. Minimize expenditure of public money for costly flood control projects;

C. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;

D. Minimize prolonged business interruptions;

E. Minimize damage to public facilities and utilities such as water and gas mains; electric, telephone and sewer lines; and streets and bridges located in areas of special flood hazard;

F. Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize blight areas caused by flooding;

G. Ensure that potential buyers are notified that property is in an area of special flood hazard;

H. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions,

I. Participate in and maintain eligibility for flood insurance and disaster relief.

1.4 METHODS OF REDUCING FLOOD LOSSES

In order to accomplish its purposes, this ordinance includes methods and provisions for:

A. Restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
C. Controlling the alteration of natural floodplains, stream channels and natural protective barriers, which help accommodate or channel flood waters;
D. Controlling filling, grading, dredging and other development which may increase flood damage; and
E. Preventing or regulating the construction of flood barriers that will unnaturally divert flood waters or which may increase flood hazards in other areas.

1.5 LEVEL OF STANDARDS

The performance requirements as specified in this title are minimum standards and address general floodplain management requirements. Specific projects may warrant additional requirements that may be imposed by the Cochise County Flood Control District. The Cochise County Flood Control District has the authority to establish standards and/or policies, as necessary, to carry out the provisions of this Ordinance. All drainage design standards, river and basin management plans, riparian preservation and mitigation standards, environmental protection, or other land-use plans approved by Cochise County and the Flood Control District are hereby incorporated into this Ordinance. All applicable floodplain management, flood hazard and flood control regulations, rules and standards promulgated by the state of Arizona and the federal government are hereby incorporated into this Ordinance.

SECTION 2
DEFINITIONS

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance it's most reasonable application.

Accessory structure, low-cost and small: A structure that is on the same parcel of property as a principal structure, the use of which is incidental to the use of the principal structure.

Appeal: A request for a review of the floodplain administrator's interpretation of any provision of this ordinance or a request for a variance.

Area of shallow flooding: A designated AO or AH Zone on a community's Flood Insurance Rate Map (FIRM) with a one percent or greater annual chance of flooding to an average depth of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

Base Flood: The flood having a one percent chance of being equaled or exceeded in any given year. Commonly referred to as the 100-year flood.

Base Flood Elevation: The calculated water surface elevation to which floodwater is anticipated to rise during the base flood.

Basement: Any area of the building having its floor sub-grade (below ground level) on all sides.

Board or Floodplain Board: The Board of Directors of the Cochise County Flood Control District. The Cochise County Board of Supervisors is the Board of Directors of the District.

Building: See "Structure".

Community: Any state, area or political subdivision thereof, or any Indian tribe or authorized tribal organization, or authorized native organization, which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.

Development: Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, , mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of materials and equipment

District: The Cochise County Flood Control District. As established by Title 48, Chapter 21 of the A.R.S.

Drainage Analysis: a Drainage report, Hydrology report, or Drainage statement used for the analysis of land improvements.

A. **Drainage Statements:** a brief description of drainage conditions applicable for a site which is not affected by 100-year flows of 500 cfs, or more, and is neither subject to detention requirements nor impacted by flows from a significant watercourse. The objective is to demonstrate adequate site drainage, and to establish finished-floor elevations which assure that all structures are free from flooding during a 100-year flood.

B. **Hydrology Report:** a report required for development which are not subject to detention requirements, nor which require extensive structural improvements for handling drainage; but which are impacted by flows from significant watercourses and/or affected by 100-year flows of 500 cfs, or more. The objective of a hydrology report is to establish finished-floor elevations which assure that all structures are free from flooding during a regulatory flood. Additional objectives of a hydrology report is to establish the size and configuration of flow-through wall openings and other minor drainage features; and, if required, to develop a grading plan which demonstrates adequate site

drainage. Hydraulic mapping of floodplain shall also be required for drainage areas producing flows of 500 cfs or greater.

C. **Drainage Report**: a report which is required for any site greater than one acre in size or for any site subject to detention requirements or adverse impact on adjacent parcel resulting from the proposed improvement. The drainage report shall contain all elements of a hydrology report, as well as the appropriate components of the required detention facility design. In addition, a drainage report shall be required for any site where extensive structural improvements for mitigating drainage impact are required.

Elevation Certificate: is an administrative tool of the NFIP which is to be used to provide elevation information necessary to ensure compliance with the community floodplain management ordinances, to determine the proper insurance premium rate, or support a request for a Letter of Map Amendment (LOMA).

Encroachment: The advance or infringement of uses, plant growth, fill excavation, buildings, permanent structures or development into a floodplain, which may impede or alter the flow capacity of a floodplain.

Erosion: The process of the gradual wearing away of landmasses. This peril is not, per se, covered under the National Flood Insurance Program.

Erosion Hazard Area: Land adjoining a watercourse regulated by this ordinance, which is deemed by the floodplain administrator to be subject to flood-related erosion losses.

Erosion Hazard Setback: The minimum horizontal distance from the top of bank of a watercourse, where a structure must be constructed or placed.

Flood or Flooding: A general and temporary condition of partial or complete inundation of normally dry land areas from: (1) the overflow of flood waters; (2) the unusual and rapid accumulation or runoff of surface waters from any source; and/or (3) the collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in this definition.

Flood Insurance Rate Map (FIRM): The official map of a community on which FEMA has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

Flood Insurance Study (FIS): The official report provided by FEMA that includes flood profiles, FIRM and the water surface elevation of the base flood.

Floodplain: Any land area susceptible to being inundated by water from any source. See "Flood or flooding."

Floodplain Administrator: The Highway & Floodplain Director or designee who oversees administration and enforcement of the floodplain management regulations contained within this ordinance as required by the NFIP.

Floodplain Management: The operation of an integrated natural resource management program, encompassing corrective and preventive measures for reducing flood and erosion damage. Floodplain management includes, but is not limited to, emergency preparedness planning, flood control works and floodplain management regulations.

Floodplain Management Regulations: This ordinance and other zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as grading and erosion controls) and other

application of police power which control development in flood-prone areas. This term describes federal, state, or local regulations in any combination thereof which provide standards for preventing and reducing flood loss and damage.

Floodplain Use Permit (FPUP): An official document which authorizes specific activity within a regulatory floodplain or erosion hazard area.

Flood-proofing: Any combination of structural and non-structural additions, changes or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents by means other than elevation.

Flood-Related Erosion: The collapse or subsidence of land along the shore of a lake or other body of water as a result of undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as a flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding.

Floodway: The area of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation. Also referred to as "Regulatory Floodway."

Floodway Fringe: The area of the floodplain on either side of the "Regulatory Floodway" where encroachment may be permitted.

Functionally Dependent Use: A use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, and does not include long-term storage or related manufacturing facilities.

Governing Body: The local governing unit (i.e., Cochise County), which is empowered to adopt and implement regulations to provide for the public health, safety and general welfare of its citizenry.

Hardship: For the purposes of approving variances of regulation under the NFIP, the exceptional hardship which would result from a failure to grant the requested variance. The governing body requires that the variance be exceptional, unusual and peculiar to the property involved. Mere economic or financial hardship alone is not exceptional. Inconvenience, aesthetic considerations, physical handicaps, personal preferences or the disapproval of one's neighbors likewise cannot, as a rule, qualify as an exceptional hardship**.** All of these problems can be resolved through other means without granting a variance, even if the alternative is more expensive, or requires the property owner to build elsewhere or put the parcel to a different use than originally intended.

Highest Adjacent Grade: The highest **natural** elevation of the ground surface prior to construction next to the proposed walls of a structure.

Historic Structure: Any structure that is:

- **A.** Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
- **B.** Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- **C.** Individually listed on a state inventory of historic places in states with historic preservation programs

which have been approved by the Secretary of Interior; or

D. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

1. By an approved state program as determined by the Secretary of the Interior or Directly by the Secretary of the Interior in states without approved programs.

Levee: A man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or diverts the flow of water so as to provide protection from temporary flooding.

Levee System. A flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.

Lowest Adjacent Grade: The lowest natural elevation of the ground surface immediately next to a building.

Lowest Floor: The lowest floor of the lowest enclosed area including basement (see "Basement" definition). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this ordinance.

Manufactured Home: A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. For floodplain management purposes, the term manufactured home also includes mobile homes, park trailers, travel trailers, recreational vehicles, and other similar vehicles placed on a site for more than 180 consecutive days.

Manufactured Home Park or Subdivision: A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

Market Value: **S**hall be determined by estimating the cost to replace the structure in new condition and adjusting that cost figure by the amount of depreciation which has accrued since the structure was constructed. The cost of replacement of the structure shall be based on a square foot cost factor determined by reference to a building cost estimating guide recognized by the building construction industry. Also defined in the substantial damage and substantial improvement section of this Ordinance. For the purpose of property acquisition, market value will be determined by a certified/qualified appraiser.

Mean Sea Level (MSL): For purposes of the NFIP, the North American Vertical Datum (NAVD) of 1988, or other datum, to which base flood elevations shown on the FIRM are referenced.

New Construction: For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after the effective date of an initial FIRM (December 4, 1984), or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, "new construction" means structures for which the "start of construction" commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

Obstruction: Includes, but is not limited to, any dam, wall, wharf, embankment, levee, dike, pile, abutment, protection, excavation, channelization, bridge, conduit, culvert, building, wire, fence, rock, gravel, refuse, fill, structure, vegetation or other material in, along, across or projecting into any regulated watercourse which may alter, impede, retard or change the direction and/or velocity of the flow of water, or due to its location, its

propensity to snare or collect debris carried by the flow of water or its likelihood of being carried downstream.

One-Hundred Year Flood: The flood having a one percent chance of being equaled or exceeded in any given year. *(See "Base Flood" definition)*

Person: An individual or individual's agent, firm, partnership, association or corporation, or agent of the aforementioned groups, or this state or its agencies or political subdivisions.

Recreational Vehicle: A vehicle that is:

A. Built on a single chassis;

B. 400 square feet or less when measured at the largest horizontal projection;

C. Designed to be self-propelled or permanently towable by a light duty truck; and

D. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel or seasonal use.

Registered Civil Engineer or Surveyor: An engineer or surveyor registered pursuant to Arizona State law.

Regulatory Floodplain: areas associated with a watercourse, including its channel, or any other floodplain or flood prone area that would be inundated by the base flood, including all base floods where the base flood peak discharge is 500 cfs or greater; those areas that are subject to sheet flow; those areas identified on subdivision plats or development plans; those areas designated by FEMA, including areas designated as D, X, and Shaded Zone X; as well as those areas that the Floodplain Administrator, using the best available data, has determined is subject to a flood hazard during the base flood.

Regulatory Flood: a 100-YEAR FLOOD with a peak discharge of 500 cubic feet per second (cfs), or greater, and which has a one percent (1%) chance of being equaled or exceeded in any given year.

Regulatory Flood Elevation: An elevation one foot above the base flood elevation for a watercourse for which the base flood elevation has been determined and shall be determined by the criteria developed by the director of ADWR for all other watercourses.

Regulatory floodway: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation.

Sheet Flow Area: Those areas which are subject to flooding with depths of one-half foot or greater during the base flood event, where a clearly defined channel does not exist and the path of the flooding is often unpredictable and indeterminate

Special Flood Hazard Area: An area designated by FEMA that is subject to a 1 percent or greater chance of flooding in any given year, and from this point forward abbreviated as SFHA. An SFHA may be designated as a Zone A, AE, AH, & AO (Zones Shaded X, X and D are not considered a FEMA SFHA).

Zone A: Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Zone AE: Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Zone AH: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between one and three feet. Base Flood Elevations BFEs derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply

Zone AO: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply. Some Zone AO has been designated in areas with high flood velocities such as alluvial fans and washes.

Start of construction: Includes substantial improvement and other proposed new development and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within 180 days from the date of the permit. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

Structure: A walled and roofed building, including a gas or liquid storage tank, which is principally above ground, as well as a manufactured home.

Substantial Damage: Damage of any origin sustained by a structure whereby the cost of restoring the structure to it's before damage condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. In the absence of information to the contrary, the appraised value of the structure as listed in the County Assessor’s records is presumed to be fair market value.

Substantial Improvement: Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred “substantial damage,” regardless of the actual repair work performed. The term does not, however, include either:

- **A.** Any project for improvement of a structure to correct existing violations of state or local health, sanitary or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or,
- **B.** Any alteration of a "historic structure”, provided that the alteration would not preclude the structure's continued designation as a "historic structure".

Variance: A grant of relief from the requirements of this ordinance which permits construction in a manner that would otherwise be prohibited by this ordinance.

Violation: The failure of a structure or other development to be fully compliant with the community’s floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this ordinance is presumed to be in violation until such time as that documentation is provided.

Water Surface Elevation: The height, in relation to the North American Vertical Datum NAVD of 1988, or other datum, of floods of various magnitudes and frequencies in the floodplains of riverine areas.

Watercourse: A watercourse means only the channel and banks of an identifiable drainage way, and not the adjoining floodplain areas.

Watershed: The drainage area above any point on a watercourse.

ACRONYMS:

ARS – Arizona Revised Statutes
BFE – Base Flood Elevation
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map
FIS – Flood Insurance Study
FPUP– Floodplain Use Permit
LOMA – Letter of Map Amendment
LOMC – Letter of Map Change
LOMR – Letter of Map Revision
LOMR-F – Letter of Map Revision based on Fill
MSL – Mean Sea Level
NFIP – National Flood Insurance Program
SFHA – Special Flood Hazard Area

SECTION 3
GENERAL PROVISIONS

3.1 LANDS TO WHICH THIS ORDINANCE APPLIES

This ordinance shall apply to all regulatory floodplain and FEMA special flood hazard areas within the boundaries of Cochise County except those incorporated cities and towns which have adopted a resolution to assume the powers and duties of floodplain management within its area of jurisdiction in accordance with A.R.S. 48-3610, unless and until said resolution is rescinded.

3.2 ESTABLISHING AREAS OF SPECIAL FLOOD HAZARD AND REGULATORY FLOODPLAINS, FLOODWAYS

A. The areas of special flood hazard identified by the Federal Emergency Management Agency (FEMA) in a scientific and engineering report entitled "The Flood Insurance Study for Cochise County, AZ and Incorporated areas, dated August 28, 2008 with accompanying Flood Insurance Rate Maps (FIRMs) date August 28, 2008, and all subsequent amendments and/or revisions, are hereby adopted by reference and declared to be a part of this ordinance. This Flood Insurance Study (FIS) and attendant mapping define the minimum area of applicability of this ordinance and may be supplemented by studies of other areas which are recommended to the Floodplain Board by the Floodplain Administrator. The Board shall delineate (or by rule require developers of land to delineate) areas within its jurisdiction where development is ongoing or imminent, and thereafter as development becomes imminent, floodplains consistent with the criteria developed by the Federal Emergency Management Agency and the Director of Water Resources. The FIS, and FIRMs are on file at the Cochise County Community Development Department, *1415 Melody Lane, Bisbee, Arizona 85603*

B. Due to continuously and episodically changing hydrologic and hydraulic conditions on the watercourses within Cochise County, base flood peak discharges, flow volumes, and associated special flood hazard areas, regulatory floodplain and erosion hazard areas are continuously subject to revision. At a minimum, base flood values will meet or exceed the current values established by FEMA, and reflect historic flood information and general, current, watershed conditions.

C. In those areas where the regulatory floodplain and erosion hazard areas are not delineated pursuant to Sections 3.2.A and 3.2.B, and upon request for a county permit, the Floodplain Administrator may require the land owner to establish the regulatory floodplain and floodway limits through a hydrologic and hydraulic study prepared by an Arizona Registered Professional Civil Engineer.

D. In those areas where a hydrologic and hydraulic study has been prepared by an Arizona Registered Professional Civil Engineer which delineates the regulatory floodplains, floodways and erosion hazard areas, and has been approved by the Floodplain Administrator, the delineation of those boundaries shown within the study shall be the regulatory floodplain, floodway and erosion hazard areas governed by this ordinance.

E. Construction of any improvement which changes the configuration of the delineated floodplain boundaries contained within the Flood Insurance Study, whether upstream or downstream from or adjacent to the parcel under development, the owner shall provide Cochise County a new delineation of regulatory floodplain boundaries affected by the improvement, prior to the release of assurances for subdivisions or certificate of occupancy for development plans. The new delineation and reports

shall be prepared in conformance with the requirements of FEMA, the Director of the Arizona Department of Water Resources and this ordinance. The owner, or the owner's engineer, shall submit the required flood insurance study information to FEMA. The owner shall be responsible for providing Cochise County a copy of all correspondence with FEMA.

3.3 COOPERATIVE AGREEMENTS AND CONSULTANTS

Cochise County may retain consultants and experts, and may enter into cooperative agreements for the delineation of regulatory floodplains, floodways, riparian habitat, and erosion hazard areas or for other assistance and guidance considered appropriate and necessary.

3.4 COMPLIANCE

All development of land, construction of residential, commercial or industrial structures, or future development that is subject to the terms of this ordinance must also comply with all other applicable laws and regulations.

3.5 ABROGATION AND GREATER RESTRICTIONS

This ordinance is not intended to repeal, abrogate or impair any existing easements, covenants or deed restrictions. However, where this ordinance and another ordinance, easement, covenant or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

3.6 INTERPRETATION

In the interpretation and application of this ordinance, all provisions shall be:

A. Considered as minimum requirements;

B. Liberally construed in favor of the governing body; and

C. Deemed neither to limit nor repeal any other powers granted under state statutes.

3.7 WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This ordinance does not imply that land outside regulatory floodplain and FEMA special flood hazard areas or uses permitted within such areas will be free from flooding or flood damages. This ordinance shall not create liability on the part of Cochise County, the Cochise County Flood Control District, the State of Arizona, FEMA, or any officer or employee thereof, for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

3.8 STATUTORY EXCEPTIONS

A. In accordance with A.R.S. § 48-3609(H), unless expressly provided, this and any regulation adopted pursuant to this article do not affect:

1. Existing legal uses of property or the right to continuation of such legal use. However, if a nonconforming use of land or a building or structure is discontinued for twelve months, or substantial damaged to the extent of 50 percent of its market value as determined by an Arizona Certified Appraiser, any further use shall comply with this article and regulations of the Cochise County.

2. Reasonable repair or alteration of property for the purposes for which the property was legally used on August 3, 1984, or on the date any regulations affecting such property take effect, except that any alteration, addition or repair to a nonconforming building or structure which would result in increasing its flood damage potential by 50 percent or more shall be either flood-proofed or elevated to or above the regulatory flood elevation;

3. Reasonable repair of structures constructed with the written authorization required by A.R.S. § 48-3613; and

4. Facilities constructed or installed pursuant to a Certificate of Environmental Compatibility issued pursuant to A.R.S. Title 40, Chapter 2, Article 6.2.

5. As provided for by A.R.S. § 48-3613(D), in addition to other penalties or remedies otherwise provided by law, this state, a political subdivision or a person who may be damaged or has been damaged as a result of the unauthorized diversion, retardation or obstruction of a watercourse has the right to commence, maintain and prosecute any appropriate action or pursue any remedy to enjoin, abate or otherwise prevent any person from violating or continuing to violate Subsection 3.8.B of this ordinance or any regulations adopted pursuant to A.R.S. Title 48, Chapter 21, Article 1. If a person is found to be in violation of Subsection 3.8.B of this ordinance, the court shall require the violator to either comply with terms of that subsection, if authorized by the Floodplain Board, or to remove the obstruction and restore the watercourse to its original state. The court may also award such monetary damages as are appropriate to the injured parties resulting from the violation including reasonable costs and attorney fees.

B. Before the following types of construction authorized by A.R.S. § 48-3613(B) begin, the responsible person must submit plans for the construction to the Floodplain Board for review and comments pursuant to A.R.S. § 48-3613(C).

1. The construction of bridges, culverts, dikes and other structures necessary to the construction of public highways, roads and streets intersecting or crossing a watercourse;

2. The construction of storage dams for watering livestock or wildlife, structures on banks of a watercourse to prevent erosion of or damage to adjoining land if the structure will not divert, retard or obstruct the natural channel of the watercourse or dams for the conservation of floodwaters as permitted by A.R.S. Title 45, Chapter 6;

3. Construction of tailing dams and waste disposal areas for use in connection with mining and metallurgical operations. This paragraph does not exempt those sand and gravel operations that will divert, retard or obstruct the flow of waters in any watercourse from complying with and acquiring authorization from the floodplain board pursuant to regulations adopted by the Floodplain Board under A.R.S. Title 48, Chapter 20, Article 1;

4. Other construction upon determination by the floodplain board that written authorization is unnecessary;

5. Any flood control district, city, town or other political subdivision from exercising powers granted to it under A.R.S. Title 48, Chapter 21, Article 1;

6. The construction of streams, waterways, lakes and other auxiliary facilities in conjunction with development of public parks and recreation facilities by a public agency or political subdivision; and

7. The construction and erection of poles, towers, foundations, support structures, guy wires and other facilities related to power transmission as constructed by any utility whether a public service corporation or a political subdivision.

3.9 UNLAWFUL ACTS

A. It is unlawful for a person to engage in any development or to divert, retard or obstruct the flow of waters in a watercourse if it creates a hazard to life or property without securing the written authorization required by A.R.S. § 48-3613. Where the watercourse is a delineated floodplain, it is unlawful to engage in any development affecting the flow of waters without securing written authorization required by A.R.S. § 48-3613.

B. Any person found guilty of violating any provision of this ordinance shall be guilty of a misdemeanor. Each day that a violation continues shall be a separate offense punishable as hereinabove described.

3. 10 DECLARATION OF PUBLIC NUISANCE

All development located or maintained within any regulatory floodplain and FEMA special flood hazard areas after August 8, 1973, in violation of this ordinance is a public nuisance per se and may be abated, prevented or restrained by action of this political subdivision. (*A.R.S. § 48-3614)*

3.11 SEVERABILITY

This ordinance and the various parts thereof are hereby declared to be severable. Should any Section of this ordinance be declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of the ordinance as a whole, or any portion thereof other than the Section so declared to be unconstitutional or invalid.

3.12 RECOVERY OF ADMINISTRATIVE AND OTHER COSTS

Cochise County shall be entitled to recover all costs, administrative, engineering and legal, as well as actual costs to remove or modify a structure, encroachment and any other work in violation of this ordinance**.**

3.13 VIOLATIONS AND ENFORCEMENT

A. The process for determining, enforcing, and appealing citations for violations shall be as established by the Legislature, which currently is codified in A.R.S. §§ 48-3613. -3614. -3615, and -3615.01. In the event the Legislature alters or adds to that process, this section shall be deemed amended accordingly.

B. The Floodplain Administrator is responsible for investigating all complaints of suspected violations of this Ordinance.

C. The board of hearing review shall be the Floodplain Board of Directors.

D. The Floodplain Administrator shall develop a form to be provided with a notice of violation, as required by statute, in which an alleged violator can admit or deny the allegations, and a form for a decision and order, as also required by statute.

E. If possible, the hearing officer required by statute will be the hearing officer who hears zoning violations. If not possible, the Floodplain Board of Directors will separately appoint a hearing officer.

F. Within 45 days of discovery of a violation of this ordinance, the Floodplain Administrator shall submit a report to the Floodplain Board which shall include all information available to the Floodplain Administrator which is pertinent to said violation. Within 30 days of receipt of this report, the Floodplain Board shall either:

1. Take any necessary action to effect the abatement of such violation; or

2. Issue a variance to this ordinance in accordance with the provisions of Section **6** herein; or

3. Order the owner of the property upon which the violation exists to provide whatever additional information may be required for their determination. Such information must be provided to the Floodplain Administrator within 30 days of such order and the Floodplain Administrator shall submit an amended report to the Floodplain Board within 30 days. At the next regularly scheduled public meeting, the Floodplain Board shall either order the abatement of said violation or they shall grant a variance in accordance with the provisions of Section 6 herein; or

4. Submit to the Federal Emergency Management Agency a declaration for denial of insurance, stating that the property is in violation of a cited state or local law, regulation or ordinance, pursuant to Section 1316 of the National Flood Insurance Act of 1968 as amended.

G. The Floodplain Administrator is authorized to obtain administrative search warrants in the manner provided by the Legislature, currently codified in A.R.S. § 48-3603.C.26.

H. The rules of procedure for hearings and review shall be the same as those adopted by the Board of Supervisors as Rules of Procedure on Zoning and Building Code Violations, except that for purposes of Floodplain violation enforcement:

1. A "complaint" is deemed to be filed upon receipt of a form or written statement by the alleged violator denying the allegations and requesting a hearing, as provided by statute. The "complaint" will consist of the Notice of Violation.

2. Service of the Notice of Violation can be affected in the first instance by Certified Mail, if the receipt is signed and returned. If the receipt is not signed and returned, service will be by personal service. If the alleged violator cannot be personally served, then service may be by any means set forth in the Arizona Rules of Civil Procedure.

3. Certain terminology that is used in the Rules of Procedure on Zoning and Building Code Violations is deemed to be changed to harmonize with Floodplain regulation and enforcement terminology. For example, "Floodplain Administrator" instead of "Zoning Inspector" and "Floodplain Board of Directors" instead of "Board of Supervisors"

SECTION 4
ADMINISTRATION

4.1 DESIGNATION OF THE FLOODPLAIN ADMINISTRATOR

The Highway & Floodplain Director or designee is hereby appointed Floodplain Administrator, whose duties include administration and enforcement of the Cochise County Floodplain Management Ordinance and the National Floodplain Insurance Program and the day to day operations of the Cochise County Floodplain Division.

4.2 DUTIES AND RESPONSIBILITIES OF THE FLOODPLAIN ADMINISTRATOR

Duties of the Floodplain Administrator, together with duly authorized representatives shall include, but not be limited to;

A. PERMIT REVIEW

Review all development permits in regulatory floodplains and FEMA special flood hazard areas to determine that:

1. The permit requirements of this ordinance have been satisfied;

2. All other required state and federal permits have been obtained by respective governmental agencies (CFR 60.3(a) (2)).

3. The site is reasonably safe from flooding;

4. The proposed development does not adversely affect the carrying capacity of areas where base flood elevations have been determined but a floodway has not been designated. For purposes of this ordinance, "adversely affect" means that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one tenth of a foot at any point or increase velocities by more than ten (10%) percent on adjacent properties.

B. SUBSTANTIAL IMPROVEMENT AND SUBSTANTIAL DAMAGE ASSESSMENTS

Review all development permits for improvements and/or damages to existing structures to determine if the application of the substantial improvement rules apply, including establishing a definition of market value determination and verifying that the estimated improvement and/or repair costs are less than 50% of the market value of the structure.

C. USE OF OTHER BASE FLOOD DATA

When Base Flood Elevation data has not been provided in accordance with Section 3.2 (A), the Floodplain Administrator shall obtain, review and reasonably utilize any Base Flood Elevation data available from a federal, state or other source, in order to administer Section 5. Any such information shall be consistent with the requirements of the Federal Emergency Management Agency and the Director of the Arizona Department of Water Resources and may be submitted to the Floodplain Board for adoption.

D. OBTAIN AND MAINTAIN FOR PUBLIC INSPECTION

Obtain and maintain the following for public inspection and make available as needed:

1. Certification required by Section 5.1(C) and Section 5.3 (lowest floor elevations, bottom of the structural frame, and utilities);

2. Certification required by Section 5.1(C) (lowest floor elevations or flood proofing of nonresidential structures and utilities);

3. Certification required by Section 5.1(C) **(**flood vents/openings);

4. Certification of elevation required by Section 5.9 (subdivisions and other proposed development standards);

5. Certification required by Section 5.11 (floodway encroachments);

6. Records of all variance actions, including justification for their issuance.

7. Obtain and maintain improvement and damage calculations required in Section 4.2

E. NOTIFICATION TO OTHER ENTITIES

1. Advise any city or town, having assumed jurisdiction over its floodplains in accordance with A.R.S. § 48-3610(B)(1), of any development plan within a regulatory floodplain or floodway which could affect floodplains, floodways or watercourses within one mile of such city's or town's area of jurisdiction. A copy of the development plan shall be provided to the city or town prior to approval of the development.

2. Whenever a watercourse is to be altered or relocated the Floodplain Administrator shall:

   a. Notify adjacent communities and ADWR prior to such alteration or relocation of a watercourse and submit evidence of such notification to FEMA.

   b. Require as a condition of the floodplain use permit that the flood carrying capacity of the altered or relocated portion of said watercourse be maintained.

3. Base Flood Elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, the Floodplain Administrator shall notify the Federal Emergency Management Agency of the changes by submitting technical or scientific data in accordance with Volume 44 Code of Federal Regulations Section 65.3. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and floodplain management requirements will be based upon current data.

4. Within one hundred twenty (120) days after completion of construction of any flood control protective works which changes the rate of flow during the base flood or the configuration of the floodplain upstream or downstream from or adjacent to the project, the person or agency responsible for installation of the project shall provide to the governing bodies of all jurisdictions affected by the project a new delineation of all floodplains affected by the project. The new delineation shall be done according to the criteria adopted by the Arizona Department of Water Resources.

5. Make interpretations, where needed, as to the exact location of the boundaries of the areas of special flood hazards (e.g., where there appears to be a conflict between a mapped boundary and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in Section 6.0.

6. Make interpretations, where needed, as to the exact location of the boundaries of the areas of special flood hazards (e.g., where there appears to be a conflict between a mapped boundary

and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in Section 6.0.

7. Corporate Boundary Changes:
   a. Notify the Federal Emergency Management Agency of acquisition by means of annexation, incorporation or otherwise, of additional areas of jurisdiction.

4.3 ESTABLISHMENT OF FLOODPLAIN USE PERMIT

A Floodplain Use Permit shall be obtained before construction or development begins, including placement of manufactured homes, within any regulatory floodplain and FEMA special flood hazard area established in Section 3.2. Application for a Floodplain Use Permit shall be made on forms furnished by the Floodplain Administrator and may include, but not be limited to, plans in duplicate drawn to scale showing the nature, location, dimensions and elevation of the area in question, existing or proposed structures, fill, storage of materials, drainage facilities and the location of the foregoing. Specifically, the following information is required:

A. Proposed elevation in relation to mean sea level of the lowest floor (including basement) of all structures. In Zone AO, elevation of existing highest adjacent natural grade and proposed elevation of lowest floor of all structures;

B. Proposed elevation in relation to mean sea level to which any non-residential structure will be flood-proofed;

C. Certification by a registered professional engineer or architect that the flood-proofing methods for any nonresidential structure meet the flood-proofing criteria in Section 5.1.C.2;

D. Require that all new subdivision proposals and other proposed developments (including proposals for manufactured home parks and subdivisions) greater than 50 lots or 5 acres, whichever is the lesser, include within such proposals base flood elevation data; and

E. Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.

These applications shall include, but not be limited to, plans drawn to scale showing the north point, nature, location and dimensions of the area in question, existing and proposed structures and utilities, washes, watercourses or drainage ways, fill, storage of materials, walls, fences, adjacent streets and driveways, or other development that may obstruct, divert or retard flow and a description of the extent to which any watercourse will be affected, altered or relocated as a result of proposed development.

A FEMA Elevation Certificate shall be required to demonstrate compliance with regulatory flood elevation requirements for structures, manufactured homes, service facilities, or other improvements.

SECTION 5
PROVISIONS FOR FLOOD HAZARD REDUCTION

5.1 STANDARDS OF CONSTRUCTION

In all regulatory floodplain and FEMA special flood hazard areas, the following standards are required:

A. Anchoring

1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy; and

2. All manufactured homes and storage tanks shall meet the anchoring standards of section 5.4.B.

B. Construction Materials and Methods

1. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage;

2. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

3. All new construction, substantial improvement and other proposed new development shall be constructed with electrical, heating, ventilation, plumbing and air conditioning equipment (including ductwork) and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding; and

4. Adequate drainage paths are required around structures on slopes to guide floodwaters around and away from proposed structures.

C. Elevation and Flood-proofing

1. Residential construction, new or substantial improvement, shall have the lowest floor, including basement, elevated to or above the Regulatory Flood Elevation:

a. In an AO Zone, elevated to one (1) foot minimum above the base flood elevation.

b. In an A Zone where a BFE has not been determined, generally, a minimum elevation of two (2) feet above the highest adjacent grade is required or be elevated in accordance with the criteria developed by the Director of the Arizona Department of Water Resources.

c. In Zones AE, AH and A1-30, elevated to one (1) foot above the base flood elevation.

Upon completion of the structure, the elevation of the lowest floor including basement shall be certified by a registered professional engineer or surveyor, and verified by the community's building inspector to be properly elevated. Such certification and verification shall be provided to the Floodplain Administrator. Residential structures may not be flood-proofed, only elevated.

2. Non-Residential construction, new or substantial improvement, shall either be elevated to conform with Section 5.1.C.1 or together with attendant utility and sanitary facilities:

a. Be flood-proofed below the elevation recommended under Section 5.1.C.1 so that the structure is watertight with walls substantially impermeable to the passage of water; and

b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and

c. Be certified by a registered professional engineer or architect that the standards of this section are satisfied. Such certification shall be provided to the Floodplain Administrator.

3. Flood openings - All new construction and substantial improvement with fully enclosed areas below the lowest floor (excluding basements) that are usable solely for parking of vehicles, building access or storage, and which are subject to flooding, shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwater. Designs for meeting this requirement must meet or exceed the following criteria:

a. Have a minimum of two openings, on different sides of each enclosed area, having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwater; or

b. Alternatively, a registered engineer or architect may design and certify the openings.

4. Manufactured Homes

a. Manufactured homes shall meet the standards in Section 5.4

5. Garages and accessory structures

a. Attached garages.

1. A garage attached to a residential structure, constructed with the garage floor slab below the regulatory flood elevation, must be designed to allow for the automatic entry of flood waters. See Section 5.1.C.3. Areas of the garage below the regulatory flood elevation must be constructed with flood resistant materials. See Section 5.1.B.

2. A garage attached to a nonresidential structure must meet the above requirements or be dry flood-proofed.

b. Detached garages and accessory structures.

1. "Accessory structure" used solely for parking or limited storage (small, low-cost sheds), as defined in Section 2.0, may be constructed such that its floor is below the regulatory flood elevation, provided the structure is designed and constructed in accordance with the following requirements

a. Use of the accessory structure must be limited to parking or limited storage;

b. The portions of the accessory structure located below the regulatory flood elevation must be built using flood-resistant materials;

c. The accessory structure must be adequately anchored to prevent flotation, collapse and lateral movement;

d. Any mechanical and utility equipment in the accessory structure must be elevated or flood-proofed to or above the regulatory flood elevation;

e. The accessory structure must comply with floodplain and floodway encroachment provisions in Section 5.7; and

f. The accessory structure must be designed to allow for the automatic entry and exit of flood waters in accordance with Section 5.1.C.3.

Detached garages, storage structures and other accessory structures not meeting the above standards must be constructed in accordance with all applicable standards in Section 5.1.(C)

D. Adverse Impacts

1. The cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one tenth of a foot along adjacent boundaries, and will not increase the flow velocity by more than 10%.

5.2 STANDARDS FOR STORAGE OF MATERIALS AND EQUIPMENT

A. The storage or processing of materials in a regulatory floodplain or FEMA special flood hazard area that are, in time of flooding, buoyant, flammable, and explosive or could be injurious to human, animal or plant life is prohibited.

B. Storage of other material or equipment may be allowed if not subject to major damage by floods and if firmly anchored to prevent flotation, or if readily removable from the area within the time available after flood warning.

5.3 STANDARDS FOR WATER SUPPLY AND WASTE DISPOSAL SYSTEMS

A. All new or replacement water supply and sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the system and discharge from systems into flood waters.

B. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

C. Waste disposal systems shall not be installed wholly or partially in a floodway.

5.4 STANDARDS FOR MANUFACTURED HOMES

All manufactured homes that are placed or substantially improved shall:

A. Meet all State of Arizona Office of Manufactured Housing requirements set forth in the Minimum Standard for Manufactured Housing Foundation in Floodplains. Including the following:

1. Foundations, or fill pad erosion protection, for installation within floodplain shall be designed by an Arizona Registered Civil Engineer and approved by all appropriate local governmental agencies and by the Office of Manufactured Housing

B. Be elevated so that the bottom of the structural frame (I-beam) or the lowest point of any attached utility (this includes duct work and ground mounted air conditioning units), whichever is lower, is elevated at or above the regulatory flood elevation as stated in 5.1 of this ordinance; and

C. Be securely anchored to an adequately anchored foundation system to resist flotation, collapse or lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces.

D. Certification that the installation of a manufactured home meets all of the requirements of this section is required as outlined in the Floodplain Use Permit. Such certification shall be provided by a licensed installer or an Arizona Licensed Civil Engineer.

E. Placement of Manufacture Home shall be placed parallel by the direction of flow.

5.5 STANDARDS FOR RECREATIONAL VEHICLES

All recreational vehicles placed within a regulatory floodplain or FEMA special flood hazard area on site will either:

A. Be on site for fewer than 180 consecutive days, and

B. Be fully licensed and ready for highway use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or

C. Meet the permit requirements of Section 4.3 of this ordinance and the elevation and anchoring requirements for manufactured homes in Section 5.4.

5.6 STANDARDS FOR GENERAL LAND DISTURBANCE

Any land disturbance that occurs within a regulatory floodplain or FEMA special flood hazard area requires a Cochise County Floodplain Use Permit.
Where more than one (1) acre of land is to be altered or disturbed or where imperviousness increases more than fifty (50%) percent from the existing conditions, a drainage analysis will be required. This report shall be certified by an Arizona Registered Professional Civil Engineer and shall include, at a minimum, the following:

A. Site plan that shall include, but not be limited to, plans drawn to scale showing the north point, nature, location and dimensions of the area in question, existing and proposed structures, washes, watercourses or drainage ways, fill, storage of materials, walls, fences, or other development that may obstruct, divert or retard flow and a description of the extent to which any watercourse will be affected, altered or relocated as a result of proposed development.

B. A schematic depicting the existing and proposed drainage patterns, identifying the 100-year floodplain limits and any proposed changes to the floodplain limits;

C. The hydrologic and hydraulic effects that the alteration or disturbance will have on adjacent properties, including public and private roadways, and demonstrate the methods to be used to

mitigate any adverse impact due to increased storm water runoff generated by the land alteration or disturbance.

NOTE: See Appendix A for Drainage Report Requirement/Formatting.

5.7 STANDARDS FOR COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

A. Application. These standards shall apply to all commercial and industrial developments where the cumulative developed area is greater than One (1) acre or it contains greater than 50% impervious area within the development.

B. Engineering. A drainage analysis detailing existing drainage conditions and proposed full development drainage conditions is to be performed by an Arizona Registered Professional Civil Engineer, and submitted to, and approved by the Floodplain Administrator prior to the approval of a building permit. The report should follow the drainage report requirements, see Appendix A.

C. Plans. Plats and development plans are to show areas subject to flooding and erosion. All site and development plans submitted shall show location, by survey or photographic methods, of streams, watercourses, canals, irrigation laterals, private ditches, culverts, lakes, or other water features, including those areas subject to flooding or erosion. The plats/plans shall also include the direction of any flow and drainage area, as well as water surface elevations, the limits of inundation, and erosion hazard setback for the base flood if such a flood has a peak flow rate equal or greater than five-hundred (500) cubic feet per second (cfs). These requirements are in addition to all Planning and Zoning site plan requirements.

NOTE: See Appendix A for Drainage Report Requirement/Formatting.

5.8 STANDARDS FOR SAND AND GRAVEL MINING

A. Extraction of sand, gravel and other materials is allowed, if permitted by all other applicable Federal, State, and local regulations, and erosion hazard areas, provided that excavations are not so located nor of such depth, or width, or length, or combination of depth-width-length as to present a hazard to structures (including, but not limited to roads, bridges, culverts, and utilities), to banks or watercourses, or to other property.

B. There shall be no stockpiling of material or tailings that may obstruct, divert or retard the flow of floodwaters except as reviewed and approved by the Floodplain Administrator.

C. Due to the rapidly changing hydraulic characteristics of watercourses in Cochise County, and the effects excavations have on these characteristics, Floodplain Use Permits for excavations shall only be issued for a limited period of time, not to exceed one year, subject to annual renewal upon review by the Floodplain Administrator.

D. In addition to those conditions provided for elsewhere, Floodplain Use Permit for excavations may impose conditions regarding the area and location in which excavations are allowed, the maximum amount of material to be excavated, and other reasonable restraints on methods of operation, including time restraints.

E. Permitting for Sand and Gravel will require a closure plan that addresses flood heights, velocity, erosion, and grade control during and after the periods of extractions. The Floodplain Administrator

may require hydrologic, hydraulic and geomorphic analyses addressing the existing conditions as well as the impacts under the proposed method of operation.

F. The Board may grant variances as provided by Section 6 of this ordinance.

G. Standards for minimal impact no permit required.

NOTE: See Appendix A for Drainage Report Requirement/Formatting.

5.9 STANDARDS FOR SUBDIVISIONS

A. All new subdivision proposals, including proposals for manufactured home parks and subdivisions, greater than 50 lots or 5 acres, whichever is the lesser, shall:

1. Submit drainage analysis to identify the special flood hazard area or the regulatory floodplain area and the elevation of the base flood identified on the final plans the elevation(s) of the proposed structure(s) and pads. If the site is filled above the base flood elevation, the final lowest floor and grade elevations shall be certified by a Registered Professional Civil Engineer or surveyor and provided to the Floodplain Administrator.

NOTE: See Appendix A for Drainage Report Requirement/Formatting.

B. All subdivision proposals and other proposed development shall be consistent with the need to minimize flood damage.

C. All subdivision proposals and other proposed development shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.

D. All subdivision proposals shall provide adequate drainage to reduce exposure to flood hazards.

E. Application

1. Land may not be parceled or subdivided in such a manner as to create lots unsuitable for development because of flood or erosion hazards.

2. All subdivision plats, development plans, associated building plans and improvement plans are subject to the design requirements for regulatory floodplains as specified under A. R. S. Section 48-3609 and this ordinance.

F. Plan Information

All tentative plats and development plans submitted to the County shall show location, by survey or photographic methods, of streams, watercourses, canals, irrigation laterals, private ditches, culverts, lakes and other water features, including those areas subject to flooding or erosion. The plats/plans shall also include the direction of any flow and drainage area, as well as water-surface elevations and the limits of inundation for the base flood, if such a flood has a contributing drainage area equal to or greater than a five-hundred (500) cfs, or is a FEMA mapped floodplain. Plats or plans shall be sealed by an Arizona Registered Land Surveyor or Civil Engineer.

1. Grading and Drainage Improvement

a. A floodplain use permit is required prior to commencement of any site improvements or grading associated with a subdivision development. A grading plan must be submitted to the Cochise County Flood Control District for review and approval. Detailed improvement plans

for storm drains or channel improvements must also be submitted to the same department for review and approval. Where a grading plan or detailed drainage improvement plans are not provided, the Floodplain Administrator may require additional information and engineering plans prior to issuing a floodplain use permit.

b. All final plats, tentative plats and development plans shall show proposed grading and drainage improvements.

2. Grading and drainage plans shall demonstrate:

a. The methods for flood proofing and/or drainage control for the development, including sufficient lot grading information to demonstrate adequate finished pad elevations and/or drainage slopes to protect building foundations;

b. That improvements are compatible with the existing upstream and downstream drainage conditions and that any proposed grading and/or grade change will not have an adverse impact on surrounding properties;

c. The methods of erosion and sediment control;

d. The methods of mitigating increased urban peak and volumetric flood water runoff or discharge on downstream properties created as a result of the development.

e. Any necessary erosion and/or sediment control practices such as re-vegetating disturbed areas.

3. Floodplain and Floodway Boundaries - Drainage Areas

a. All final plats and development plans shall indicate the limits of the regulatory floodplains, erosion hazard boundaries, and the limits of the federally established regulatory floodplains and floodway (if applicable), and be delineated in a surveyable manner and sealed by an Arizona Registered Land Surveyor.

b. Where subdivision improvements modify or remove the SFHA that is designated on the federal FIRM, a hydraulic analysis of the impact and the engineering plans for the modifications must be approved by the District and a Conditional Letter of Map Revision (CLOMR) submitted and approved by FEMA prior to the recording of the final plat.

c. Where modification of a federally defined floodway is proposed, approval of a CLOMR by FEMA amending the floodway boundary is required prior to the recording of the final plat.

d. Prior to the release of assurances for subdivisions or certificate of occupancy for development plans, the Letter of Map Revision (LOMR) must be approved by the Flood Control District and FEMA.

4. Street Elevation Requirements

Streets required for paved permanent access shall be designed and constructed so that the flow depths over them do not exceed 1 foot in depth during the base flood.

5. Building Site Location Restrictions

a. Building sites are to be located outside of the regulatory floodplain if possible.

b. No structure or fill is to be placed within the regulatory floodway.

c. Structures shall be constructed/placed in accordance with the erosion hazard setback as described in Section 5.12.

6. Setbacks from Channels

Setbacks from banks of watercourses and/or other protection measures shall be established in accordance with approved studies and this ordinance. Along reaches of watercourses where hazards from eroding banks or channel meandering are considered by the Floodplain Administrator to be severe, special engineering studies, prepared and sealed by an Arizona Registered Professional Civil Engineer may be required of the property owner or developer.

7. Cost recovery for drainage or flood control improvements.

The Floodplain Board may establish a cost recovery system or fee system for the improvement of installation of public flood control systems. The purpose of the fee is to provide a method for off-site improvements necessary to mitigate the effect of urbanization and to provide a systematic approach for the construction of public flood control improvements. If such a system is adopted, it shall demonstrate that the fee will in some manner benefit the property from which the fee is collected and be applied equitably to all property in proportion to floodwaters generated by urban use of the property. The fees will also be restricted to providing flood control improvements necessary for the allowed use of the properties from which the fee is collected, and the fees shall be reasonably related to the actual cost of providing flood control improvements beneficial to the site or surrounding area.

5.10 MAINTENANCE OF PRIVATE DRAINAGE IMPROVEMENTS

When drainage improvements are associated with an approved development plan, subdivision plat or approved engineering report, and are constructed to provide flood protection to remove or reduce flood hazards, including those identified by FEMA or for storm water quality control, and where those improvements are privately owned, then it shall be the responsibility of the property owner(s) to perform maintenance as necessary to ensure the integrity of said drainage improvements and maintenance of the flood carrying capacity to the designed discharge.

A. Covenants, conditions and restrictions shall be required for private drainage improvements, prior to the construction of the improvements. The covenants, conditions and restrictions must outline maintenance responsibilities of the property owners and must be reviewed and approved by the Floodplain Administrator, prior to the construction of the drainage improvements.

5.11 FLOODWAYS

Located within areas of special flood hazard established in Section 3.2 are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles and erosion potential, the following provisions apply:

A. Prohibit encroachments, including fill, new construction, substantial improvements and other development, unless certification by a registered professional engineer or architect is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

B. If Section 5.11(A) is satisfied, all new construction and substantial improvements shall comply with all other applicable flood hazard reduction provisions of Section 5.0.

5.12 EROSION HAZARD AREAS AND BUILDING SETBACKS

A. Setbacks near major watercourses

For major watercourses with base flood peak discharges of 2,000 cfs or greater, the following build setbacks shall be required where approved bank protection is not required:

1. Along the major natural watercourses such as the San Pedro River and Babocomari River, there will be a minimum building setback of 300 feet. All other major watercourses will follow State Standard methods for calculating setbacks.
2. Along major natural watercourses where unusual conditions do exist that may increase or decrease the required erosion hazard setback, building setbacks shall be established on a case-by-case basis by the Floodplain Administrator using the standard adopted by the ADWR or other applicable engineering methods which establish safe limits for the development. Unusual conditions include but are not limited to historical meandering of the watercourse, large excavation pits, poorly defined or poorly consolidated banks, natural channel armoring, proximity to stabilized structures such as bridges or rock outcrops, and changes in the direction, amount and velocity of the flow of water within the watercourse.
3. When determining building setback requirements, the Floodplain Administrator shall consider the danger to life and property due to existing flood heights or velocities and historical channel meandering.
4. For constructed channels, structural bank protection to prevent erosion is required for major watercourses with base flood peak discharge of more than 2,000 cfs unless a written waiver of the requirement is granted by the Floodplain Administrator. A waiver of the requirement may be granted based on an acceptable engineering study, which has been prepared and sealed by an Arizona Registered Civil Engineer.

B. Setbacks near minor watercourses

For minor natural washes with a base flood peak discharge of less than 2,000 cfs, the following building setbacks shall be required:

A. A distance of 50 feet from watercourses with base flood peak discharges of less than 2,000 cfs, but more than 500 cfs.

B. A distance of 20 feet from watercourses with base flood peak discharges of less than 500 cfs, but more than 100 cfs.

C. Alternative safe limits for erosion setbacks approved in writing by the Floodplain Administrator based on an acceptable engineering study prepared and sealed by an Arizona Registered Civil Engineer. However, at no time shall a setback of less than 20 feet from the top of channel bank be permitted in order to provide for reasonable access and stability of nearby structure foundations, except as allowed pursuant to subpart D of this provision.

D. Along minor natural washes where unusual conditions exist, building setbacks shall be established on a case-by-case basis by the Floodplain Administrator, using ADWR standards or other applicable engineering methods or an acceptable engineering study is prepared and sealed

by an Arizona registered civil engineer and approved by the Floodplain Administrator. When determining building setback requirements, the Floodplain Administrator shall consider danger to life and property due to existing flood heights or velocities and historical channel meandering. Unusual conditions include but are not limited to historical meandering of the watercourse, large excavation pits, poorly defined or poorly consolidated banks, natural channel armoring, proximity to stabilized structures such as bridges or rock outcrops, and changes in the direction, amount and velocity of flow of the waters in the watercourse.

E. For constructed channels, channel banks are required to be stabilized to prevent erosion along minor watercourses with base flood peak discharges of less than 2,000 cfs, but greater than 500 cfs. Stabilization is required unless a waiver to the requirement is granted by the Floodplain Administrator based on an engineering study prepared and sealed by an Arizona registered civil engineer who demonstrates an appropriate building setback for an earthen channel, based on soil and natural flow conditions. For constructed channels with a base flood peak discharge of less than 500 cfs, channel stabilization may be required based on engineering analysis and assessment of soil conditions and flow velocities.

SECTION 6
VARIANCE PROCEDURE

6.1 NATURE OF VARIANCES

The variance criteria set forth in this section of the ordinance are based on the general principle of zoning law that variances pertain to a piece of property and are not personal in nature. A variance may be granted for a parcel of property with physical characteristics so unusual that complying with the requirements of this ordinance would create an exceptional hardship to the applicant or the surrounding property owners. The characteristics must be unique to the property and not be shared by adjacent parcels. The unique characteristic must pertain to the land itself, not to the structure (except with respect to Subsection 6.3.B, below), its inhabitants or the property owners.

It is the duty of the Floodplain Board to help protect its citizens from flooding. This need is so compelling and the implications of the cost of insuring a structure built below the regulatory flood elevation is so serious that variances from the flood elevation or from other requirements in the flood ordinance are quite rare. The long-term goal of preventing and reducing flood loss and damage can only be met if variances are strictly limited. Therefore, the variance guidelines provided in this ordinance are detailed and contain multiple provisions that must be met before a variance may be properly granted. These criteria are designed to screen out situations in which alternatives other than a variance are more appropriate.

6.2 APPEAL BOARD

A. The Floodplain Board of Cochise County shall hear and decide:

1. Appeals (other than appeals of notices of violations governed by Section 3.12 above) when it is alleged there is an error in any requirement, decision, or determination made by the Floodplain Administrator in the administration of this ordinance; and

2. Requests for variances from the requirements of this ordinance.

B. Before approving such applications, the Floodplain Board shall consider all technical evaluations, all relevant factors, standards specified in other sections of this ordinance, and:

1. the danger that materials may be swept onto other lands to the injury of others;

2. the danger of life and property due to flooding or erosion damage;

3. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

4. the importance of the services provided by the proposed facility to the community;

5. the availability of alternative locations for the proposed use, which are not subject to flooding or erosion damage;

6. the compatibility of the proposed use with existing and anticipated development;

7. the relationship of the proposed use to the comprehensive plan and floodplain management program for that area;

8. the safety of access to the property in time of flood for ordinary and emergency vehicles;

9. the expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site; and,

10. the costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, water system and streets and bridges.

C. Upon consideration of the factors of Section 6.2(c) and the purposes of this ordinance, the Floodplain Board may attach such conditions to the granting of variances as it deems necessary to further the purposes of this ordinance.

D. Any applicant to whom a variance is granted shall be given written notice, signed by the Floodplain Administrator that:

1. the issuance of a variance to construct a structure below the base flood level may result in increased premium rates for flood insurance up to amounts as high as $25 for $100 of insurance coverage; and

2. Such construction below the base flood level increases risks to life and property.

Such notification shall be maintained with a record of all variance actions as required in Paragraph 6.2.E of this ordinance. Such notice will also state that the land upon which the variance is granted shall be ineligible for exchange of land pursuant to any flood relocation and land exchange program. A copy of the notice shall be recorded by the Floodplain Board in the office of the Cochise County Recorder and shall be recorded in a manner so that it appears in the chain of title of the affected parcel of land.

E. The Floodplain Administrator shall maintain a record of all variance actions, including justification for their issuance and report such variances issued in its biennial report submitted to FEMA.

6.3 CONDITIONS FOR VARIANCES

A. Generally, variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the regulatory flood level, provided that the provisions of Sections 4 and 5 of this ordinance have been fully considered. As the lot size increases beyond one-half acre, the technical justification required for issuing the variance increases.

B. Variances may be issued for the repair, rehabilitation or restoration of structures listed in the National Register of Historic Places or the State Inventory of Historic Places, upon a determination that the proposed repair or rehabilitation will not preclude the structures continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

C. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

D. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

E. Variances shall only be issued upon:

1. A showing of good and sufficient cause;

2. A determination that failure to grant the variance would result in exceptional hardship to the applicant;

3. A showing that the use cannot perform its intended purpose unless it is located or carried out in close proximity to water;

4. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with existing local laws or ordinances.

5. A determination that the variance is justified pursuant to A.R.S. § 48-3609.B.7.

SECTION 7
FLOODPLAIN PERMITS AND OTHER FEES

For each floodplain use permit application (for properties in a regulatory floodplain or FEMA special flood hazard area), a nonrefundable filing/permit fee shall be charged based upon the adopted fee schedule. Fees specified herein shall be in addition to any fees required pursuant to other applicable regulations and ordinances.

A. Single and multi-family residence, and manufactured home, for which a drainage/hydrology study has not been submitted and approved - $150.00.

B. Single and multi-family residence, and manufactured home, for which a hydrology and hydraulics report has been submitted and approved - $65.00.

C. Accessory structures or additions, including detached garages, sheds, carport and other structures (per structure or addition) - $40.00 each

D. Permit fees for commercial and other non-residential developments shall be assessed in accordance with cost of the development as follows:

if cost is less than $250,000 - $150.00
if cost is over $250,000 - $250.00

E. For use of outside consultant for plan review and/or inspection - $ at cost

F. Variance requests - $75.00

SECTION 8
ADOPTION OF ARIZONA DEPARTMENT OF WATER RESOURCES (ADWR) STANDARDS

The Director of the Arizona Department of Water Resources has authority outlined in A.R.S. §48-3605(A) to establish base flood elevations. The ADWR with the assistance of the Arizona Floodplain Managers Association and Arizona city and county flood control districts have established standard methodologies for determining base flood elevations and other design standards for floodplain and stormwater studies. The Cochise County Flood Control District hereby adopts the following standards and any modifications and amendments thereto:

8.1 ADWR STANDARD 1-97 - "Instructions for Organizing and Submitting Technical Documentation for Flood Studies"

This standard establishes documentation standards for flood studies that delineate or revise floodplains. It applies to any Level III flood studies submitted to Cochise County.

8.2 ADWR STANDARD 2-96 - "Delineation of Riverine Floodplains and Floodways in Arizona"

This standard provides methodologies for estimating 100-year peak discharges, delineating 100-year floodplain limits and determining administrative floodplains. There are three levels of complexity of analysis. The Floodplain Administrator will determine the level of analysis required.

8.3 ADWR STANDARD 3-94 - "Supercritical Flow"

This standard establishes guidelines for modeling floodways for watercourses with supercritical or near critical flow.

8.4 ADWR STANDARD 4-95 - "Identification of and Development within Sheet flow Areas"

This standard provides minimum standards for identification of sheet flow areas and for development within them.

8.5 ADWR STANDARD 5-96 - "Watercourse System Sediment Balance"

This standard provides guidelines for determining: lateral migration setbacks for riverine floodplains, channel degradation estimation for alluvial channels, and evaluation of river stability impacts associated with Sand & Gravel mining

8.6 ADWR STANDARD 7-98 - "Watercourse Bank Stabilization"

This standard provides standards for design and construction of channel bank protection.

8.7 ADWR STANDARD 8-99 - "Stormwater Detention/Retention"

This standard details methodologies for sizing detention/retention systems when required.

8.8 ADWR STANDARD 9-02 - "Floodplain Hydraulic Modeling"

This standard provides a procedure to use in order to fulfill the requirements of flood insurance studies and county flood damage prevention ordinances.

8.9 ADWR STANDARD 6-05 - "Development of Individual Residential Lots within Flood-prone Areas"

This standard provides guidelines for site plans for individual residential lots to be used for all new construction.

8.10 ADWR STANDARD 10-07 - "Hydrologic Modeling Guidelines"

SECTION 9
AMENDMENTS

Amendments to these Regulations shall be as follows:

9.1 Amendment to the text of these Regulations shall occur only upon a hearing of the Flood Control District Board of Directors after giving not less than fifteen (15) days notice by publication of the proposed change in a newspaper of general circulation in the County. Any interested person may submit an application for an amendment, or the Flood Control District Board of Directors may act upon its own motion.

9.2 A copy of all proposed changes and notice of hearing shall be submitted to the appropriate Flood Insurance Administrator in FEMA and to the Arizona Department of Water Resources for their comment at least thirty days prior to the hearing.

9.3 Approval of an amendment to these Regulations may be granted only if the amendment does not conflict with any applicable federal or state requirements for Floodplain Management Regulations. A copy of any regulation adopted by the district shall within five (5) days thereafter be filed with Arizona Department of Water Resources and with each political subdivision and Municipal Corporation in the area of jurisdiction**.**

APPENDIX A

Drainage Report Requirements for General Land Disturbance greater than 1 acre or where imperviousness increases by more than 50% (Sec. 5.6), Commercial and Industrial Developments (Sec. 5.7), Special Flood Hazard Areas (Sec 3.2) of the Cochise County Floodplain Regulations

Bound report with cover stating:

- Project title (Address and Parcel No.), Section, Township & Range, City, State
- Prepared for: name of the development/developer/owner
- Prepared by: Engineering Firm & Address
- Date of report & Revised dates if any

Information required in the Drainage Report

Introduction

- Description of Project
- Purpose & Objective
- Previous Drainage Information
- Flood Insurance Studies: Location within designated Federal Emergency Management Area (FEMA) areas as shown on Flood Insurance Rate Maps (FIRM)

Hydrologic Analysis

- Provide description of Existing Conditions: Land Zoning, Hydrologic parameters [watershed areas, lengths, slopes, basin factors, rainfall values (Per State Standard mean precipitation estimates, per NOAA Atlas 14)], Latitude/Longitude value used for project site (used for selecting rainfall values), soil types, impervious areas, vegetative cover, etc.
- Provide description of Proposed Conditions: Explanation of what is being proposed for the parcel; (buildings, pavement etc.) explain whether or not impervious area (improvements) will result in an increase/decrease in discharge.
- Provide delineations of the offsite and onsite watersheds. The total of individual onsite watershed areas must equal the project site watershed area.
- Preferred hydrologic method used in determining 100-yr discharge for Offsite (if any) and Onsite flows: PC-Hydro software for rural or urban areas with less than 10 sq. mi., have a time of concentration of less than 180 minutes, and are not controlled by flood-control reservoirs or basins. If drainage area is greater than 10 sq. mi., apply acceptable State Standard methods (SS10-07) or Tucson Stormwater Management Study (TSMS) methodology to determine 100-yr discharge values.
- Provide summary table showing pre-development discharges vs. post-development discharges for the 100-year storm events.
- Provide Detention Pond Routing results, if modeling detention/retention basins, using AZ State Standards (SS8-99), HEC-1 or HEC-HMS to demonstrate post-development (proposed condition) flows shall not exceed pre-development (existing condition) flows.

Hydraulic Analysis

- Provide description of analysis results of both existing and proposed conditions with hydraulic summary table comparing results. Submit summary of analysis including: 100-yr water surface elevations, velocities and flow depths through existing conditions and proposed improvements (channels, pipes, box culverts, weirs, etc). The following are items that should be summarized in the analysis of the drainage report and included within tables of the report.
- Describe structure sizes and erosion control requirements if any within the text of the report.

Hydraulic Analysis cont

- Provide 100-yr water surface elevations using Manning's X-section if simple, HEC-RAS X-Sections if more detailed for regulatory flow (Cochise County Regulatory flows per floodplain regulations are areas producing more than 500 cubic feet per second (cfs) or greater).
- For purposes of the Cochise County Floodplain Ordinance, "adversely affect" means that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one tenth of a foot along adjacent boundaries. Provide analysis and discussion that development will not adversely impact adjacent properties. If proposed development will adversely impact adjacent parcels, analyze and explain mitigation plan so as not to adversely impact parcels.
- If flow within a channel is proposed to be re-aligned, improvements should be modeled for maximum depth (sub-critical conditions) for finished floor requirements, maximum velocities (super critical analysis) to determine scour depths, super elevation for flow in a curved channel; provide summary tables within the text of the report showing comparison of the results.
- Provide pipe design flows under roads:
  Arterial, Main Collector: 25-yr flow
  Minor Collector: 10-yr flow
  Local: 2-yr flow
- Recommend all drainage pipes shall be RCP or CMP
- Recommend all drainage pipes be 12 inches in diameter (minimum)
- Recommend minimum cover over pipe shall be 2.5 feet
- Recommend minimum preferred slope of drainage pipe is 1.0% (0.5% absolute minimum)
- Recommend maximum slope of drainage pipe is 9%
- Recommend velocity of flow within the pipe not be less than 3 ft/s (cleaning) or greater than 10 ft/s (scour)
- Description of basin (details, method of construction, sizing etc.)
- Calculations showing time-stage relationship inside basin (peak flow, peak elevation, peak hour)
- Outfall structure detail showing all outfall elevations
- Recommend outfall structure with a low flow discharge and grated top
- Show all outfall structure discharge elevations and 100-year storm event elevation
- Detention basin sections showing all showing 100-year water surface elevation
- Overflow spillway made of concrete or grouted rip rap
- Basin discharge shall have flared end with concrete or grouted rip rap apron
- Recommend 3:1 basin side slopes
- Recommend 10 foot wide level access around entire basin for maintenance
- Recommend enclosing basin with gated fence
- Verify groundwater elevations do not impact operation of basin
- Detention basin shall drain within 24 hrs so as not to cause a mosquito issue.

Scour Analysis & Sedimentation

- Provide Analysis to demonstrate the controlling of scour and/or the transporting of sediment is minimized. This includes but is not limited to controlling scour at pipe outlets, scour along channel bottoms, channel banks, detention/retention sloped areas, stabilization, etc. Provide analysis of pipe outlet velocities, channel velocities and provide erosion protection per ADWR SS7-98 Bank Stabilization, Section 9 Channel Stabilization and Hydraulic Structures methods per City of Tucson Standards Manual for Drainage Design and Floodplain Management (SMDDFM). Scour analysis stability for structures should follow Erosion and Sedimentation (Ch 6) requirements from the SMDDFM.

Maintenance Instructions

- Provide instruction on how drainage improvements are to be maintained. Culverts within in Cochise County frequently get plugged up from sediment transport. If clogged pipes are not cleaned, flows frequently get diverted to adjacent parcels resulting in property damage. Therefore it is important that maintenance inspections and procedures are performed periodically (monthly, bi-monthly, before a storm, after a storm, yearly, etc.) to ensure conveyance systems are working properly.

Summary and Conclusions

Provide a summary of the results of the proposed improvements

References

Provide a list of references used for the analysis provided in the drainage report

List of Figures

Scales shall be engineering scale: (1"= 10', 20', 30', 40', 50', 60', 100', 1000', etc.) provided on 8.5" x 11", 11"x 17", 24" x 36" paper

- Provide a Vicinity Map
- Provide a location of the project site on a current FEMA Firm Panel, Fema Firmettes etc.
- Provide an Existing Conditions Watershed Map (showing concentration points, flow direction, parcel no., existing contours, watershed delineations of offsite areas that affect the project, onsite watershed delineations within the project site, 100-yr existing conditions discharge values, hydrologic soil type delineations, subwatershed areas values, 100-yr existing hydraulic cross sections [river stations in HEC-RAS], 100-yr existing conditions water surface elevations (WSE), 100-yr existing conditions floodplain delineations legend, etc.).
- Provide an Existing Conditions Floodplain map (showing concentration points (consistent with existing conditions), flow direction, parcel no., proposed contours, onsite watershed delineations, 100-yr proposed condition discharge values, 100-yr proposed hydraulic cross sections [river stations in HEC-RAS], 100-yr water surface elevations (WSE), 100-yr floodplain delineations, finished floor elevation, detention basin WSE, legend information.
- Proposed Conditions Floodplain (showing concentration points, flow direction, parcel no., proposed contours, Cross sections [river stations in HEC-RAS], legend information, etc.
- Provide watershed shape files, electronically

List of Tables

- Pre-development/Post-development discharges
- Pre-development/Post-development Water Surface Elevations (if base flow is greater than the regulatory base flow.

List of Appendices

- Provide Hydrologic and hydraulic analysis calculations, Hydraulic, pipe design sizing if not in hydrologic files, erosion control calculations, scour calculations, weir calculations, curb opening calculations, detention/retention basin calculations (if using retention basins, dry wells must be registered with the Arizona Department of Water Resources (ADWR). NOTE: IF ANALYSIS FILES CAN BE PROVIDED ELECTRONICALLY, PLEASE PROVIDE ELECTRONIC COPIES IN LIEU OF HARD COPIES.

Drawings

- Pre and post-development plans on 24"x36" sheets in AutoCAD or ArcView format. Can be on same drawings with dashed or ghost lines for existing conditions. (scales: same as list of figures)
- Detail sheets showing pertinent design specifications.
- Copies of electronic files used in drainage analysis (hydrology, hydraulics, scour analysis, etc.) is requested to be provided on disk and attached in the drainage report.