***Project Name*** Date Submitted: **mm/dd/yyyy**

**Status:**  Preliminary (Expression of interest, Support letter request)  Formal implementation request  Update

# Project Summary

**Discipline:**  Physics  Biology  Geology  Engineering  Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Project Description  Provide a brief project description, including purpose, scientific merit and scope. Add relevant citations or references as appropriate. If necessary, add additional space to this form. |
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| Community  SDSTA is committed to creating a welcoming and collaborative work culture; see <https://sanfordlab.org/about-us/who-we-are>. It is critical that all partners and stakeholders embody SDSTA's commitment to SURF’s core values (Safety Focus, Care for Others, Professional, and Team Player) as a necessary ingredient for a successful collaborative scientific environment. Describe project efforts and considerations in these areas. |
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| Research Category  Describe the general nature of the proposed research and whether the project is “non-proprietary” or “proprietary”. Proprietary research includes commercial or private R&D which is not being supported by Government funding, and results from which are not publicly releasable or there is no requirement that results are published in open scientific literature. Research conducted at SURF must be unclassified, and there can be no research or activities concerning the production or utilization of special nuclear material (see Section 51 of the Atomic Energy Act). |
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| Funding Status  List funding sources (select all that apply) and indicate award durations as well as any pending proposals. If necessary, add additional space to this form. | | |
|  | DOE: *Award No., duration* | Institutional: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| NSF: *Award No., duration* | Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Pending Proposal(s): *Please add all relevant information.* | |

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| Personnel  List members associated with collaborating institutions, and indicate which institutions expect to have personnel participating in activities at SURF. If necessary, add additional space to this form. | |
| *Institutional Personnel (including Position/Role)* | *Perform activities at SURF* |
| *Institution1: Person1 (faculty), Person2 (postdoc), Person3 (student), etc.* | Yes  No |
|  | Yes  No |
|  | Yes  No |
|  | Yes  No |
|  | Yes  No |
|  | Yes  No |
|  | Yes  No |
|  | Yes  No |
|  | Yes  No |
|  | Yes  No |
|  | Yes  No |

# Experiment Equipment

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| General  Provide a description of equipment, systems and/or processes that will be used during the project at SURF. If necessary, add additional space to this form or provide separate documents. |
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| General Equipment / Hardware  Provide a list of equipment, parts and tools required to perform activities at SURF. Include pictures, diagrams, and manuals (and/or links to these items) where appropriate.  If necessary, add additional space to this form in this section or the categories below. | | | | |
|  | *Name of equipment / part / tool* | *Dimensions (W´ D´ H)* | *Mass (lbs/kg)* | *Detail / Notes* |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Chemicals  List chemicals, including some detector components (e.g., crystals, gasses, scintillator, etc.) or hazardous materials (e.g., lead for shielding); flammability ratings are required for plastics. All chemicals must have a safety data sheet (SDS) and must be approved by SDSTA before they are brought onto SURF property.  Note: The experiment is required to maintain an inventory of chemicals, including storage and usage locations as well as dates of arrival and departure from SURF. | | | | |
|  | *Name of chemical (incl manufacturer if known)* | *Quantity* | *Detail / Notes (incl container type such as glass, flammability, etc.)* | *Waste Expected?* |
| 1 |  |  |  | Yes  No |
| 2 |  |  |  | Yes  No |
| 3 |  |  |  | Yes  No |
| 4 |  |  |  | Yes  No |
| 5 |  |  |  | Yes  No |

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| Electrical Equipment  List electrical equipment and associated specifications. Equipment should be approved by a nationally recognized testing lab (NRTL). Low-smoke zero-halogen (LSZH) jacketed cables are required for underground use at SURF. Note: the experiment is required to maintain an inventory, including inspection dates. | | | | |
|  | *Name of electrical equipment / tool (incl manufacturer, model # if known)* | *Voltage (Volts)* | *Current (Amps)* | *Certifications (e.g., UL, CSA, etc.)* |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |

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| Hoisting and Rigging Equipment  List hoisting & rigging equipment, including hoists, cranes as well as rigging gear such as slings and shackles, etc. Note: Experiment-owned hoisting and rigging equipment may need to be inspected on a regular basis, and the experiment is required to maintain an inventory. | | |
|  | *Name of hoisting & rigging equipment (incl manufacturer, model # if known)* | *Detail / Notes (incl manufacture / purchase date)* |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
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| Pressure Vessels  List pressure vessels. Note: Pressure vessels (including owned, leased and/or rented units) need to be inspected regularly, and the experiment is required to maintain an inventory. | | |
|  | *Name of pressure vessel equipment (incl manufacturer, model #, national board # if known)* | *Detail / Notes (incl manufacture / purchase date)* |
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| Radioactive Materials  List radioactive materials. Transportation of radioactive sources to or from SURF property must be coordinated with the SDSTA Radiation Safety Officer (RSO), and only individuals approved by the SDSTA RSO are authorized to handle radioactive materials on SURF property. New radioactive sources may need to be added to the SDSTA NRC license, which can take up to 90 days.  Note: The experiment is required to maintain an inventory. | | |
|  | *Name of radioactive material (incl isotope, manufacturer, activity if known)* | *Detail / Notes (incl purpose, physical description)* |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
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# Experiment Area and Infrastructure Needs

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| Location  Indicate preferred project site(s) from the main accessible underground elevations (feet below surface) and SURF facilities (underground and surface) listed below. | | | |
| 300L | 2000L | 4850L  Davis Campus  Ross Campus  West Drift  17 Ledge  Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Surface  Surface Lab  Core Archive  Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 800L | 4100L |
| 1700L | Not sure |
| Other Level(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| Main site considerations:  *Provide details of site preferences, e.g. depths, accessibility, environmental criteria, etc.* | | | Site selection visit requested  Proposed date:       Number of people: |

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| Space  Provide information regarding the footprint of the experiment setup, including any height considerations. Also provide storage, staging and office needs. If warranted, add drawings and diagrams. | | |
|  | Storage:  N/A  Cold  Heated | Office space requested |
| Staging:  N/A  Surface  UG | Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| Site Preparations  Include any special project site requirements. Indicate expectations for expenses (some charges may apply). If necessary, add additional space to this form. | | |
|  | No site preparations required | Cost estimate requested |
| Concrete (e.g., floor, pedestal, etc) | Site / equipment enclosure |
| Hoist | Drilling (holes, mounting, etc) |
| Water mgmt. (e.g., sump, pipe, filtration, etc) | Ground support (e.g., rock bolts, mesh) |
| Electrical / network | Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| Site Environment  Indicate significant project sensitivities to various environmental parameters. If necessary, add additional space to this form. | | |
|  | No significant environmental sensitivities | |
| Temperature  Required range: \_\_\_\_\_\_\_\_ C | Humidity  Required range: \_\_\_\_\_\_\_\_% |
| Dust | Pressure changes |
| Vibration (e.g., drilling, blasting) | Radiation (also radon) |

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| Services  List requirements. Include a description of any other facility support requested. Indicate expectations for expenses (some charges may apply). | | |
| No Services Required | Power *(provide detail in separate table below)* | IT Services *(provide detail in separate table below)* |
| Compressed Air *(detail pressure and duration required)* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Compressed Gases *(detail cylinder size, quantity and expected usage)* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Cryogens *(detail vessel size, quantity and expected usage)* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Water *(detail quantity and quality)* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Transportation of Hazardous Items, incl chemicals *(detail items and expected frequency)* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Material Assays *(provide # samples and sensitivity required)* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Other Services *(list items and relevant details):* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |

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| Electrical Service  Provide information regarding required electrical service based on the equipment and associated power requirements listed in Section 2. SDSTA provides necessary electrical connections, including 3-phase power: 480V / 208V / 120V (a transformer may be required). Indicate expectations for expenses (some charges may apply). If extension cords are necessary, use heavy-duty or extra heavy-duty 12 AWG (minimum); GFCI also required. Experiment provides conditioned or UPS backup power (several power blips occur per year due to weather). If necessary, add additional space to this form. | |
|  | Electrical service:  No  Yes *(Note: SURF provides)*  120 V: # circuits: \_\_\_\_\_ # outlets: \_\_\_\_\_ at \_\_\_\_\_\_\_\_ amps  208 V: # circuits: \_\_\_\_\_ # outlets: \_\_\_\_\_ at \_\_\_\_\_\_\_\_ amps  480 V: # circuits: \_\_\_\_\_ # outlets: \_\_\_\_\_ at \_\_\_\_\_\_\_\_ amps |
| Other: *(Note: Expt provides)*  Extensions cords:  No  Yes Quantity: \_\_\_\_\_  Power strips:  No  Yes Quantity: \_\_\_\_\_  UPS:  No  Yes Quantity: \_\_\_\_\_ |

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| Information Technology Service  Provide information regarding network and computer resources (below, check all that apply). Where indicated below, provide estimates of quantities. SDSTA provides necessary network hardware so that it can manage and maintain the equipment. Indicate expectations for expenses (some charges may apply). Experiments provide their own computer resources (for servers in the SURF IT Server Room, there are specification guidelines). If necessary, add additional space to this form. | |
|  | Network service:  No  Yes *(Note: SURF provides)*  Network type:  Wired, # ports \_\_\_\_\_  Wireless, # connections \_\_\_\_\_  Network access:  Onsite  Offsite (requires VPN, static IP)  Network minimum data transfer bandwidth: \_\_\_\_\_ Mbps |
| Computer resources:  No  Yes *(Note: Experiment provides)*  Computer type:  Laptop, #\_\_\_\_\_  Desktop/server, #\_\_\_\_\_  Computer location:  Expt site  Surface (e.g., IT Server Room) |
| Other service / resources:  Phone *(SURF provided)*  Timing *(Expt provided)*  Other: \_\_\_\_\_\_\_\_\_\_ |

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| Equipment Logistics  Describe how materials will arrive at SURF and associated logistics for transportation and handling. Highlight large, heavy, or sensitive/high-value items from the equipment list in Section 2. Items are transported underground (cage) and on the level (rail) by SDSTA personnel. Estimate # loads; shipments up/down will be coordinated with SURF (restrictions may apply). Note: Yates/Ross Cage max cargo dimensions: 139 cm (W), 377 cm (L), 258 cm (H); max load weight = 4808 kg (same max capacity as SURF forklifts); options exist for items that exceed nominal dimensions (up to 732 cm, 4536 kg). | |
|  | Delivery to SURF:  Expt personnel  Mail / courier  Freight |
| Equipment Packaging:  Palletized  Crated (wood)  Boxed (cardboard) |
| Handling at SURF:  Expt personnel (i.e., hand-carry or backpack)  Forklift (surface and/or UG)  Rail transport (UG), incl staging on rail truck(s) on surface  Dolly / cart / wagon (surface and/or UG)  Staging for assembly / system checkout (surface and/or UG)  Hoisting required, max mass: \_\_\_\_\_ tons (surface and/or UG)  Sensitive / high-value transport *(special form required)* |

# Hazards and Environment, Safety & Health Management

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| Potential Hazards & Risk Assessment:  Check experiment-related hazards. Note that most activities require a separate written Hazard Analysis. For experiments with significant or numerous hazards, an Experiment Hazard Assessment Summary (EHAS), quantitative analyses, walk-through inspections and readiness reviews may be required. In general, SDSTA manages training for experiment personnel; in some cases, the experiment may need to arrange for specialized training. | | | | | |
| Fall exposures > 4 feet\* | Working above others | Ladder use | Scaffold use | Scaffold erection\* | Confined space entry\* |
| Heavy equipment operation (e.g. crane, excavator, etc.)\* | Hoisting & rigging\* | Boom lift operations | Forklift operations / powered industrial trucks\* | High noise levels | Limited/impaired communication |
| Work in hot/humid environment | Air emissions (incl. equipment/generators) | Waste generation (may req. training) | Discharges to sanitary system | Potential impact to storm water / UG water | Potential spill to environment |
| General demolition | Trenching / excavation | Welding / cutting / brazing (req. permit)\* | Excessive dust | Potential silica exposure\* | Potential asbestos exposure\* |
| Chemical use (req. safety data sheet, may req. training) | Lead (Pb) work\* | Installation of power – temporary or permanent\* | Electrical equipment maintenance (if > 50 V may req. training) | Lockout / tagout (LOTO) activities\* | Cord-and-plug tools |
| Radiation – ionizing (incl. exempt-quantity, may req. amendment)\* | Radiation – nonionizing (e.g. lasers, RF)\* | Biological hazards (e.g. animal/insect bites/stings, mold, etc.) | Fire / explosion / extreme temperature (req. permit / fire watch)\* | Soldering (permit not req.) | Rotating equipment |
| Potential oxygen deficiency (ODH)\* | Pressurized air/fluids & compressed gases\* & vacuum | Cryogens\* | Use of refrigerants (req. safety data sheet) | Ergonomics (lifting > 50 lbs, etc.) | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

***\*Denotes Special Training, Permit and/or Competent Person required***

# Personnel Access Requirements

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| Personnel Schedule  List expected onsite experiment personnel as function of time and project phase, including maximum and minimum numbers. Guide training for experiment personnel may be appropriate and provide flexibility for groups requiring sustained access. |
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| Personnel Access  List number of onsite work hours expected per day and per week (steady-state and maximum, underground and surface). Personnel require a badge when on SURF property (training is required before a personal badge is issued). Standard underground access via the Ross shaft for day shift is: 7:30am or 12:00pm [Down]; 12:15pm or 4:30pm [Up]. Standard UG access is 5 days per week (Mon-Fri); access at other times or days may be coordinated. Limited periods of 24-hour coverage up to 7 days per week with shifts up to 12.5 hours can be accommodated (shifts beyond 12.5 hours in duration are managed under the SDSTA fatigue management policy). Additional access guidelines may apply. |
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# Experiment Schedule

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| Experiment Schedule  Provide a schedule of experiment activities, including different phases of the project such as installation, commissioning, operation, and decommissioning. If necessary, add additional space to this form. |
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# Experiment Operations

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| What-If… Scenarios  List results and consequences to experiment and any mitigation measures that are planned or that are being considered. | | | |
| *Topic Area* | *What if…* | *Result / Consequences (List different scenarios if applicable)* | *N/A* |
| Access | What if access to experiment equipment was restricted for longer than one day? |  |  |
| Ventilation | What if the laboratory temperature rose above or fell below the specified limits? |  |  |
|  | What if the laboratory humidity rose above or fell below the specified limits? |  |  |
|  | What if the laboratory exhaust system went down? |  |  |
| Water | What if purified water became unavailable? |  |  |
|  | What if chilled water became unavailable? |  |  |
|  | What if potable water became unavailable? |  |  |
|  | What if industrial water became unavailable? |  |  |
|  | What if the fire water system was triggered and fire water/mist came in contact with your experiment? |  |  |
|  | What if fire water/mist did not activate when needed? |  |  |
|  | What if there was a water leak within the laboratory? |  |  |
| Water Inflows | What if the laboratory began filling with water because of a catastrophic water inflow (storm) event? |  |  |
| Water | What if the waste water collection system inside the laboratory overflowed because pumps weren't working? |  |  |
| Compressed Air | What if the compressed air system provided by the facility became unavailable? |  |  |
| Power | What if normal power goes down? Would your experiment be damaged if it was unpowered for an extended period of time? |  |  |
|  | What if standby power generators ran out of power (nominally for fire & life safety), assuming normal power is still down? (96 hours of standby is the requirement) |  |  |
| What if power quality fluctuated outside of specified limits: voltage drop, harmonic distortion, etc.? |  |  |
| What if the experiment-provided UPS fails? |  |  |
| *Topic Area* | *What if…* | *Result / Consequences (List different scenarios if applicable)* | *N/A* |
| Electromagnetic Interference (EMI) | What if EMI became unacceptable? |  |  |
| Cyberinfrastructure | What if network connections outside of the laboratory became disabled? |  |  |
| What if network connections inside of the laboratory became disabled? |  |  |
|  | What if connection to external data processing became unavailable? |  |  |
|  | What if connection to internal data processing became unavailable? |  |  |
|  | What if network time protocol (NTP) was unavailable? |  |  |
| Transportation | What if material handling systems were unavailable (rail cars, hoists/cranes, etc.)? |  |  |
|  | What if material handling systems became disabled while in transport? (for example, cryogens in transport on rail cars) |  |  |
| Fire & Life Safety | What if an evacuation was conducted due to a hazardous event (e.g., fire)? Describe situations where you would keep the experiment running or shut it down? |  |  |
| Excavation | What if there was excessive disturbance of the experiment due to blasting/excavation activities nearby? |  |  |
|  | What if geotechnical repairs needed to be made to the rock structure above or near the experiment? |  |  |
| Other | What if…? *Name scenario critical to the experiment.* |  |  |

# Decommissioning Plan

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| Decommissioning Plan  Provide initial details regarding how the experiment will be decommissioned. If necessary, add additional space to this form. |
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# SDSTA Review Section – to be completed by SDSTA personnel

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| **Research Category** (SDSTA determination based on user input)  Non-proprietary  Proprietary | | | | |
| Experiment Implementation Program Requirements  Additional documentation requirements. | | | | |
| Required for all Experiments:  User Agreement (UA)  Insurance (General Liability, Workers’ Compensation) | | | | |
| Services Agreements:  General Services Agreement (GSA)  Contract | | | | |
| Environment, Safety & Health Requirements  Based on the information provided in the Experiment Planning Statement, the following training, documentation, and reviews are warranted. | | | | |
| Hazard Analysis:  (JHA/SOP required for most activities) | | | | |
| Minimum Training:  Orientation (surface and/or underground)  General Safety – Basic (and subsequent Annual Refresher Training (ART))  Other Training:  SDSTA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Non-SDSTA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
| Inventories:  Chemicals  Electrical  Hoisting & Rigging  Pressure Vessels  Radioactive Materials | | | | |
| Assessment Documents:  Experiment Hazard Assessment  Quantitative  Quantitative  Quantitative  Summary (EHAS), incl additional training Analysis – Mechanical Analysis – ODH Analysis – Pressure | | | | |
| Reviews:  Walk-through Inspection(s)  Readiness Review(s)  Merit Review | | | | |
| SDSTA Review | *Name* | *Date* | | *Signature* |
| **SCIENCE** |  | |  |  |
| **ENVIRONMENT, SAFETY & HEALTH** |  | |  |  |
| **ENGINEERING** |  | |  |  |
| **INFORMATION TECHNOLOGY** |  | |  |  |
| **HOISTS AND SHAFTS** |  | |  |  |
| **SURFACE OPERATIONS & UTILITIES** |  | |  |  |
| **UNDERGROUND OPERATIONS** |  | |  |  |
| Other Review (If applicable) | *Name* | *Date* | | *Signature* |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | |  |  |
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| **SDSTA Acceptance** | *Name* | *Date* | | *Signature* |
| **SURF LABORATORY DIRECTOR** |  | |  |  |

**Revision History**

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| **Rev** | **Date** | **Section** | **Paragraph** | **Summary of Change** | **Authorized by** |
| 03 | 4/30/24 | NA | NA | Added Community Relations and modified verbiage | CCR 938 |
| 04 | 2/7/2025 | NA | NA | Updated Community Relations section | CCR 1071 |