International Isotopes Inc.

April 5, 2011

ATTN: Document-Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Submittal of Responses to Requests for Additional Information (RAI)
TAC L32739.

To Whom it May Concern,

The following document is provided as a response to the US Nuclear Regulatory Commission RAIs pertaining to the International Isotopes Fluorine Products Inc. December 30, 2009 application to license a depleted uranium hexafluoride de-conversion and fluorine extraction process facility.

(1) Official Responses Environmental Report RAIs

Please contact me by phone at 208 524-5300 or email at jjmiller@intisoid.com if you have any questions regarding this letter or require additional information.

Sincerely,

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Radiation Safety Officer

JJM-2011-25

Enclosure as Stated

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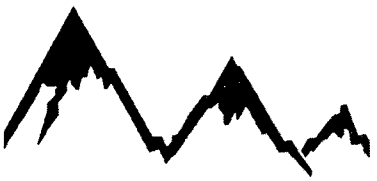

International Isotopes Fluorine Products

International Isotopes Fluorine Products, Inc.
(IIFP)

A Wholly Owned Subsidiary of

International Isotopes, Inc.

Fluorine Extraction Process & Depleted Uranium De-conversion Plant (FEP/DUP)

Official Responses to Environmental Report RAIs

Revision A

March 31, 2011

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RAI 1

Provide a description of preconstruction and construction activities and their associated impacts.

a. *Provide definite preconstruction activities within each pertinent section of the Environmental Report (ER). The ER mentions only potential preconstruction activities (e.g., Section 2.1.2, "Site Construction" provides a list of potential preconstruction activities).*

This information is needed to assess the effects of construction and to develop the cumulative effects analysis within the Environmental Impact Statement (EIS). Cumulative effects include past, present, and reasonably foreseeable future actions. Impacts from preconstruction activities will be evaluated in the cumulative effects analysis along with those of the proposed action and any other past, present, and reasonably foreseeable future actions. Therefore, it is necessary that these preconstruction activities and their impacts be clearly distinguished throughout the ER from the construction activities that are considered part of the proposed action.

RESPONSE:

The listing of the potential preconstruction activities in Section 2.1.2 has been deleted with descriptions of the preconstruction activities added in Sections 2.1.2.1 through 2.1.2.16. In the environmental assessment, the preconstruction activities were assessed collectively unless specifically mentioned within the pertinent environmental resource sections. See the Environmental Report Documentation Impact for RAI 2.b

Environmental Report Documentation Impact: The listing of potential preconstruction activities will be deleted in the 2nd paragraph of Section 2.1.2. The 3rd paragraph will be revised to reflect the collective assessment of all the preconstruction activities in each pertinent environmental resource. The 4th and 5th paragraphs will be revised to reflect the various construction stages. Descriptions of preconstruction activities will be added to the Environmental Report Section 2.1.2 after the 11th paragraph. Section 2.1.2 will be revised to read as follows:

2.1.2 Site Construction

The Proposed License Action construction and startup schedules are provided in the ER Chapter 1.

Construction of the Phase 1 facility is expected to begin in 2012 and startup of operations in 2013. IIFP is proposing to request an exemption from NRC to conduct some pre-license preparatory type construction (preconstruction) activities that are planned to start in 2011. The pre-~~licensing~~ construction proposed~~s~~ activities only affect the timing of work and will not increase the scope or environmental impact of facility construction. ~~Potential pre-licensing construction activities may include the following:~~

~~Clearing land,~~
~~Site grading and erosion control,~~
~~Installing main entrance roadbed and drainage to highway,~~
~~Installing construction trailer,~~
~~Preparing preliminary site roadways and gravel parking area,~~
~~Potential drilling of water wells,~~
~~Constructing power substation,~~
~~Stubbing in gas line to the meter,~~
~~Beginning administration building construction,~~

~~Beginning warehouse building construction,~~
~~Installing geothermal heating/cooling loops, and~~
~~Installing firewater tanks.~~

Throughout this ER, where applicable, pre-~~license~~ construction is considered collectively in evaluating the environmental impacts for each pertinent section. In each environmental resource, preconstruction activities ~~and~~ ~~is~~are determined to have a "SMALL" impact in each of the impact areas evaluated except for Ecological Resource where the impact to wildlife will be MODERATE during preconstruction activities.

Construction will occur in ~~three~~ four ~~phases~~stages. The first stage will involve certain pre-licensing construction tasks allowed under 10 CFR 40.32(e). The ~~first~~ second ~~phase~~ stage will involve certain pre-~~licensing~~ construction tasks based on NRC approval of the exemption request. The activities will be preparatory in nature and will not involve any process or safety related equipment or systems. Required permits will be obtained prior to the start of preconstruction, and pre-operational baseline environmental samples will be collected. In addition, geotechnical investigations will be conducted prior to construction of roadways, buildings, and water retention systems. Specifically, ~~A~~a NPDES Spill Prevention Control Countermeasures Plan ~~and an NPDES Construction Stormwater Permit with the General Construction~~ Permit will be completed prior to the implementation of pre-~~license~~ construction activities.

The third construction stage will begin ~~A~~after NRC approval of the license~~.~~. ~~general construction will begin and~~ This stage will complete any unfinished pre-~~licensing~~ construction activities, including buildings, completion of roads and pads, and installation of systems and equipment, ~~will be completed~~ and will involve the remaining construction through completion ~~for~~ of the Phase 1 ~~f~~Facility. The ~~third~~ fourth construction ~~phase~~ stage is expected to begin in 2015 and will complete the Phase 2 F~~f~~acility to add additional DUF_6 de-conversion capacity.

The Hobbs, New Mexico site characteristics are such that it will not likely need major earth grading or movement. Excavation is required for sewer systems, roads, pads, building foundations and floors, etc.

During construction ~~phases~~ of the IIFP Site, conventional earthmoving and grading equipment will be used. The removal of very dense soil (caliche) may require the use of heavy equipment with ripping tools. Soil removal work for foundations will be controlled to minimize excavation. In addition, loose soil and/or damaged caliche will be removed prior to installation of foundations for seismically designed structures. Less than 10% of the total 640-Section area will be disturbed.

The IIFP F~~f~~acility will require the installation of water, natural gas, and electrical utility lines. It is expected that some of these utilities will be installed during the pre-~~licensing~~ construction period.

On–site wells will be utilized to supply potable water, process makeup water, and fire water. The site is over the Ogallala Aquifer. There are several existing monitoring and production wells for the surrounding utility companies on the site ~~that will be investigated for use in lieu of installing new wells~~.

The natural gas line feeding the site will connect to an existing, nearby line. This will minimize impacts of short-term disturbances related to the placement of the tie-in line.

A new electrical transmission line is proposed for providing electrical service to the IIFP F~~f~~acility. There are currently 115 and 230 kV transmission lines along U.S. Highway 62/180 (U.S. 62/180) and New

Mexico Highway 483 (NM 483). In conjunction with the new electrical lines serving the site, the local electrical utility company will install an independent substation to ensure service.

Descriptions of the preconstruction activities are provided in Sections 2.1.2.1 through 2.1.2.16.

2.1.2.1 Site Clearing 16.2 Hectares (40 Acres)

The area of clearing will include locations of buildings, process structures, storage pads and roads. Clearing encompasses an area approximately 244 m x 305 m (800 ft x 1,000 ft) inside the 16.2 ha (40-ac) facility site. The work will include the removal of any brush, small vegetation and some topsoil.

2.1.2.2 Pre-construction Erosion and Stormwater Run-off Control

Temporary silt fencing and sediment straw bales will be installed around the areas of construction to entrap silt and to prevent its migration off site. Drainage trenches and ditch checks will be installed along the entrance road to prevent run-off and silt from the site onto NM 483 right-of-way. Site sloping, earth berms, underground drainage pipe, and wet sediment retention basins will be installed to entrap storm water run-off from construction areas.

2.1.2.3 Installation of Truck Washing Station

A truck wash-off station or portable unit will be installed prior to the intersection of the entrance road with NM 483 to minimize silt carryover onto the public right-of-way.

2.1.2.4 Site Grading and Erosion Control/Sedimentation Retention for Buildings, Process Structures, Storage Pads and Roads

Conventional earthmoving and grading equipment will be used to remove most soil for site leveling and for digging foundations and footings for buildings, process structures and storage pads. Very dense soil (caliche) removal may require the use of heavy equipment with ripping tools. Excavation for foundations will be minimized. In addition, loose soil and/or damaged caliche will be removed prior to installation of foundations for seismically designed structures. Less than 10% of the total 259-ha (640-ac) area will be disturbed. Silt fences and straw bales will be used to control erosion and to protect undisturbed areas. Temporary sedimentation basins will also be installed to control stormwater runoff.

2.1.2.5 Main Entrance Roadbed with Drainage to 16.2-ha (40-ac) Site

The entrance to the facility is from the west via a paved road [approximately 899 m (2,950 ft)] that intersects with NM 483. The road connects with the facility road system at the main gate and guard station. Adjacent to the main gate area and to the north is the paved and striped employee and visitor parking lot.

The main entrance roadbed, with compacted gravel base course and drainage, will be constructed from NM 483 to the 16.2-ha (40-ac) facility site main gate location. The roadbed, approximately 6.1 m x 899 m (20 ft wide x 2,950 ft long), will remain through construction without a wearing coat (asphalt). Before facility start-up, the asphalt wearing coat will be installed to provide a finished main entrance road.

2.1.2.6 Construction/Office Trailer Installation

A construction/office trailer containing offices for engineers and construction supervisory personnel will be installed at a strategic location inside the 16.2-ha (40-ac) facility site. Since no sanitary waste disposal equipment will be in place during construction, the construction trailer will not maintain any functional toilet facilities. Portable sanitary facilities will be stationed in locations convenient to construction areas. The construction trailer will require temporary 115/230 volt, single phase power.

2.1.2.7 Electrical Substation Installation

A new electrical substation will be installed by the utility company to provide electrical service to the IIFP Facility. It is expected that this substation will be installed on the IIFP facility site and will be enclosed inside a secure chain link fence. It is also expected that new poles and high-voltage lines will be installed from existing high-voltage transmission lines along NM 483 to the substation.

2.1.2.8 Gas Main Installation to 16.2 ha (40 ac) Site

A new natural gas service line will be installed by the utility company to the 16.2-ha (40-ac) IIFP site. The service line will be connected to a metering loop containing valves, regulators, safety valves, isolation valves, check valves and facility-wide main meter. Gas piping from the metering loop will not be installed until NRC license approval is granted.

2.1.2.9 Administrative Building Shell Construction

The Administrative Building houses the offices of personnel not directly involved in the production and maintenance functions of the facility. This building is accessed directly through the front door from the parking lot. The rear portion of this building is the Change/Locker Area with toilet facilities, showers and lockers. The main employee entrance and boundary control area are located on the west side of the Change/Locker Area. A turn-style and access controls are located at the security fence permitting employee entrance into the controlled area.

Upon completion of Architectural and Engineering design drawings, and upon approval of same by all authorities having jurisdiction, construction of the Administrative Building (shell only) will commence. The building foundations, footings, floor slab and under-slab utilities will be installed first. Foundation and footing design will be based upon the results of the soil analysis evaluation.

The Administrative Building shell will be a pre-engineered steel building with approximate dimensions of 24.4 m x 15.3 m (80 ft long x 50 ft wide) with eave height of 4.6 m (15 ft). The preconstruction building will include the following: insulated exterior walls, insulated sloped standing seam metal roof, reinforced concrete floor slab on grade, temporary lighting for construction, guttering, downspouts, interior metal studs for partition walls, door frames, windows, anchor bolts, fasteners, etc.

The building shell will be constructed to provide for future interior finishes of tile and/or carpet flooring, painted sheetrock wall covering, 0.6 m x 1.2 m (2 ft x 4 ft) acoustical suspended ceiling tile system with lay-in type lighting fixtures and geo-thermal heat pump heating and cooling systems.

2.1.2.10 Maintenance and Stores Building Shell Construction

The Maintenance and Stores Building is located southeast of the Fluoride Products Trailer Loading Building. This building contains small tools, machines, repair equipment, and maintenance supplies such as pipe and fittings, hardware, electrical parts and other small items required for maintenance of the facility. No raw, licensed, or in-process materials or finished products are stored in this building. An office area is provided for maintenance supervision and stores personnel.

Upon completion of Architectural and Engineering design drawings, and upon approval of same by all authorities having jurisdiction, construction of the Maintenance and Stores Building (shell only) will commence. The building foundations, footings floor slab and under-slab utilities will be installed first. Foundation and footing design will be based upon the results of the soil analysis evaluation.

The Maintenance and Stores Building shell will be a pre-engineered steel building with approximate dimensions of 18.3 m x 15.3 m (60 ft long x 50 ft wide) with eave height of 4.6 m (15 ft). The preconstruction building will include the following: insulated exterior walls, insulated sloped standing seam metal roof, reinforced concrete slab floor, temporary lighting for construction, guttering, downspouts, interior metal studs for office and toilet partition walls, door frames, windows, anchor bolts, fasteners, etc.

The building shell will be constructed to provide for future interior finishes in office and toilet areas of tile flooring, painted sheetrock wall covering, 0.6 m x 1.2 m (2 ft x 4 ft) acoustical suspended ceiling tile system with lay-in type lighting fixtures.

2.1.2.11 Material Warehouse Building Shell Construction

The Material Warehouse is located just northeast of the Process Offices and Laboratory Building. This warehouse is used to receive and store such items as piping components, electrical conduit, wiring, equipment for capital construction projects and spare parts. Small quantities of chemicals such as paints, oils, and cleaning agents are stored in the warehouse, but the quantities are limited to meet New Mexico Commercial Building Code (NMCBC) and National Fire Protection Association (NFPA) requirements. No licensed, raw, or in-process materials or finished products are stored in this building.

Upon completion of Architectural and Engineering design drawings, and upon approval of same by all authorities having jurisdiction, construction of the Material Warehouse (shell only) will commence. The building foundations, footings, floor slab and under-slab utilities will be installed first. Foundation and footing design will be based upon the results of the soil analysis evaluation.

The Material Warehouse Building shell will be a pre-engineered steel building with approximate dimensions of 30.5 m x 15.3 m (100 ft long x 50 ft) wide with eave height of 5.5 m (18 ft). The preconstruction building will include the following: insulated exterior walls, insulated sloped standing seam metal roof, reinforced concrete slab floor, temporary lighting for construction, guttering, downspouts, interior metal studs for office and toilet partition walls, door frames, windows, anchor bolts, fasteners, etc.

The building shell will be constructed to provide for future interior finishes in office and toilet areas of tile flooring, painted sheetrock wall covering, 0.6 m x 1.2 m (2 ft x 4 ft) acoustical suspended ceiling tile system with lay-in type lighting fixtures.

2.1.2.12 Temporary Fencing

Temporary chain-link fencing with locking gates will be installed around the Construction/Office Trailer and around each building shell for protection from vandalism.

2.1.2.13 Facility Site Roadbeds and Gravel Parking Areas for Construction

The inside-facility road begins at the main security gate and continues in an easterly direction where it divides into an intersection with two access roads, one heading north and the other heading south. These roads surround the process areas of the facility and eventually meet to form a loop, thereby allowing access around the facility in either direction. The loop formed by the road is approximately 213 m x 122 m [700 ft long (north to south) x 400 ft wide (east to west)]. For descriptive purposes, the four sections of the road loop are called the North, South, East and West Roads, so named by their proximities to the North, South, East and West boundaries of the 16.2-ha (40-ac) facility site. Just north of the main gate location is the employee and visitor parking lot.

The roadbed and base course will be installed for the North, South, East and West Roads and for the parking lot. No asphalt wearing course will be installed on facility roads or the parking lot until construction of the IIFP Facility is essentially complete.

2.1.2.14 Water Well Drilling

On–site wells will be utilized to supply potable water, process makeup water, and fire water. The site is over the Ogallala Aquifer. Two wells will be required to satisfy facility water requirements. These wells will be installed and capped at the wellheads for connections to the facility water distribution systems after NRC License approval. Lea County intends to drill a 350 gallon per minute well on the 640 acre site prior to transferring titlevof the land over to IIFP.

2.1.2.15 Geothermal Heat Pump Loop Installation

Administrative, stores, process offices, laboratory, guard station and other high occupancy areas are heated and cooled by ground water source (geothermal) heat pump systems. The current concept is to design, select and install two horizontal, ground water source loop systems close to consumers.

A total capacity of 60 tons [720,000 British Thermal Units/Hour (BTUH)] is estimated for the buildings identified and currently sized in the facility concept. Actual sizing, selection and engineering of the system will be performed during detailed design.

The installation of only the ground water source heat pump loops is requested under this Exemption. Loops will be installed in trenches below grade and will be brought above grade and capped for connection to heating and cooling equipment after NRC License approval.

2.1.2.16 Firewater Tank Installation

Just east of the East Road are located two above-ground Fire Water Tanks [379 m^3 (100,000 gal each)] and the Fire Pump House. The Fire Pump House contains the main fire water pump, the back-up diesel fire water pump, jockey pump, piping and controls. The IIFP facility fire protection system is described in Chapter 7, "Fire Safety," of the License Application, including the classification of individual buildings as per the NMCBC and NFPA 13 (NFPA, latest edition).

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The installation of the two Fire Water Tanks will be requested under an Exemption. After tank structure and footings and foundations are designed, based upon soil core sample analysis, and approvals are obtained from all authorities having jurisdiction, the installation of the tank footings and foundations will begin. The footings, foundations and tank design and construction will meet all codes governing the installation of fire water tanks in the State of New Mexico.

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RAI 1

Provide a description of preconstruction and construction activities and their associated impacts.

b. *Separate preconstruction from construction activities in the ER. For example, in Section 4.10.1, "Facility Construction," separate the preconstruction from the construction workforce. Another example, in Section 4.6.1, "Air Quality Impacts from Construction,"including Tables 4-11 and 4-12, separate respectively the "air quality impacts and emission rates" and "predicted property-boundary air concentrations" into preconstruction and construction). Topics that need revision include, but may not be limited to: waste streams, employment information, activity durations, air emissions, economic information, transportation information, and water/usage/discharge information.*

This information is needed to assess the effects of construction and to develop the cumulative effects analysis within the Environmental Impact Statement (EIS). Cumulative effects include past, present, and reasonably foreseeable future actions. Impacts from preconstruction activities will be evaluated in the cumulative effects analysis along with those of the proposed action and any other past, present, and reasonably foreseeable future actions. Therefore, it is necessary that these preconstruction activities and their impacts be clearly distinguished throughout the ER from the construction activities that are considered part of the proposed action.

RESPONSE: Impact analyses of construction activities have been conducted for both the preconstruction and the construction stages of the IIFP Facility. In addition to the examples provided above, impact analyses have been performed for each of the resources described in Chapter 3. These analyses and the predicted impacts are described for land use (Section 4.1); transportation (Section 4.2); geology and soils (Section 4.3); water resources (Section 4.4); ecology (Section 4.5); meteorology, climatology, and air quality (Section 4.6); noise (Section 4.7); historical and cultural resources (Section 4.8); visual/scenic resources (Section 4.9); socioeconomic (Section 4.10); public and occupational health (Section 4.12); and waste management (Section 4.13). Analyses and predicted impacts regarding environmental justice also are presented (Section 4.11). Revisions to these sections are provided in the Environmental Report Documentation Impact for RAI 2.b.

Section 2.6 will be revised to summarize these environmental impacts mainly through a new table to be added to show the environmental impact for preconstruction, Phase 1 Facility construction, Phase 2 Facility construction, Phase 1 Facility operation, Phase 2 Facility operation, decommissioning, and cumulative effects. Descriptions of these environment impacts are provided in Chapter 4, with the revisions to each environmental resource shown in the Environmental Report Documentation Impact to RAI 2.b.

Environmental Report Documentation Impact: Section 2.6, "Cumulative Effects," will be revised to include a summary of environmental impacts. The new Section 2.6 will be re-titled, "Environmental Impacts and Cumulative Effects of the Proposed License Action and the Phase 2 Facility." Section 2.6 will be revised to add two new paragraphs before the initial (old 1st) paragraph to introduce the impact analysis for all the phases of the IIFP Facility to include preconstruction, Phase 1 Facility and Phase 2 Facility construction; Phase 1 Facility and Phase 2 Facility (Phase 1 plus a future expansion) operation; and decommissioning as well as cumulative impacts. The old 3rd paragraph will be revised to show the extent of impacts considering all lifecycle phases from the IIFP Facility. A new paragraph after the old 3rd paragraph will be added to introduce a new Table 2-7 which summarizes the environmental impacts for each of various phases of the IIFP Facility (preconstruction, Phase 1 and Phase 2 construction; Phase 1 and Phase 2 operation; and decommissioning). Section 2.6 will be revised to read as follows:

2.6 Environmental Impacts and Cumulative Effects of the Proposed License Action and the Phase 2 Facility

Impact analyses have been performed for each of the resources described in Chapter 3, "Description of the Affected Environment." These analyses and the predicted impacts are described for land use (Section 4.1); transportation (Section 4.2); geology and soils (Section 4.3); water resources (Section 4.4); ecology (Section 4.5); meteorology, climatology, and air quality (Section 4.6); noise (Section 4.7); historical and cultural resources (Section 4.8); visual/scenic resources (Section 4.9); socioeconomic (Section 4.10); public and occupational health (Section 4.12); and waste management (Section 4.13). Analyses and predicted impacts regarding environmental justice also are presented (Section 4.11).

As presented in Chapter 4, these impact analyses have been performed for the various stages of the construction and operation of the IIFP Facility (preconstruction, Phase 1 Facility and Phase 2 Facility construction, Phase 1 Facility and Phase 2 Facility operation and decommissioning). Additionally, the impacts were also assessed for the Alternative Actions. A discussion of cumulative impacts also is presented for each of the thirteen (13) chapter sections. Direct and indirect impacts for the Phase 1/Phase 2 Facility were assessed for normal operational events. Accident analyses were performed for potential on-site accidents as part of the Integrated Safety Analysis (ISA) and documented in the ISA Summary for the Proposed License Action (IIFP, 2009). As part of these analyses, off-site consequences from non-radiological and radiological hazards were evaluated, and items-relied-on-for-safety (IROFS) were imposed to prevent or mitigate those accidents exceeding the criteria in 10 CFR 70.61.

Cumulative effects are those impacts that result from the incremental impact of an action added to other past, present, and reasonably foreseeable actions in the future. IIFP considered past, current and potential facilities and activities that could have some potential or cumulative impacts. The future expansion that results in the Phase 2 ~~f~~Facility projected for the 2015-2016 timeframe and the potential approval by NRC to exempt some pre-~~license~~-construction activities for the Proposed License Action has already been included in this ER as reasonably foreseeable actions.

The anticipated impacts of the ~~proposed~~ construction and operation of the IIFP F~~f~~acility are expected to be minimal; thus any incremental accumulative impacts caused by IIFP should be inconsequential. The development and implementation of this Proposed License Action and its technology potentially avoid impacts to other more environmentally sensitive sites.

The standard of significance (i.e., SMALL, MODERATE, LARGE) established by the NRC in NUREG-1748 [Environmental Review Guidance for Licensing Actions Associated with NMSS (Nuclear Material Safety and Safeguards) Programs] was used to define the extent of impacts from the Proposed License Action. The extent of impacts considering all lifecycle phases from the Proposed License Action combined with the Phase 2 Facility (Phase 1 plus expansion) is briefly summarized below by the environmental resource that could be impacted. Potential environmental impacts are assessed to be SMALL, except during construction periods (Phase 1 and Phase 2) when MODERATE impacts for transportation on local highways may occur and SMALL to MODERATE impacts on transportation during both operation stages and during decommissioning. ~~and~~ ~~t~~Temporary disruptions may occur in some wildlife travel corridors during preconstruction and Phase 1 construction resulting in a MODERATE impact for ecological resources. ~~Overall,~~ T~~t~~he cumulative potential impacts for these two resources are SMALL.

Table 2-7 summarizes the environmental impacts for each of various stages of the Proposed License Action and a future expansion that results in the Phase 2 Facility (preconstruction, Phase 1 and Phase 2 construction, Phase 1 and Phase 2 operation and decommissioning) for each of the resources described in

Chapter 3. Overall, adverse impacts from the Proposed License Action and the Phase 2 Facility are anticipated to be SMALL. Implementation of mitigation measures will further reduce the severity of these impacts.

The cumulative collective radiological exposure to the off-site population will be well below the maximum dose limit of 100 mrem per year to the off-site Maximum Exposed Individual (MEI) and below the limit of 25 mrem/yr specified in 40 CFR 190 for uranium fuel cycle facilities. Annual individual doses to involved workers will be monitored and controlled to maintain exposure well below the regulatory limit of 5 rem per year.

The sum total of all local and non-local cumulative impacts and effects are expected to be insignificant when compared to the established federal, State and local regulatory limits. Positive cumulative effects include the expansion of job opportunities and local business and tax base revenues plus the Gross Revenue Tax and corporate income tax revenues to the State and regional communities.

Table 2- 7 Environmental Impacts for the IIFP Facility

Resource	Construction Impacts			Operations Impacts		Decommissioning Impacts	Cumulative Impacts
	Preconstruction	Phase 1	Phase 2	Phase 1	Phase 2		
Land Use	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Transportation	SMALL	MODERATE	MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL
Soils	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Water	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Ecological	MODERATE	MODERATE	SMALL	SMALL	SMALL	SMALL	SMALL
Air Quality	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Noise	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Historical/Cultural Resources	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Visual/Scenic Resources	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Socioeconomic							
Population	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Economic	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Community	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Environmental Justice	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Public & Occupational Health							
Non-radiological	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Radiological	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Accidents	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Waste Management	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL

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RAI 1

Provide a description of preconstruction and construction activities and their associated impacts.

c. *Provide estimated milestones (including durations) of all preconstruction and construction activities relative to the anticipated issuance of the license.*

This information is needed to assess the effects of construction and to develop the cumulative effects analysis within the Environmental Impact Statement (EIS). Cumulative effects include past, present, and reasonably foreseeable future actions. Impacts from preconstruction activities will be evaluated in the cumulative effects analysis along with those of the proposed action and any other past, present, and reasonably foreseeable future actions. Therefore, it is necessary that these preconstruction activities and their impacts be clearly distinguished throughout the ER from the construction activities that are considered part of the proposed action.

RESPONSE:

A proposed schedule for the preconstruction activities and for the construction of the Phase 1 and Phase 2 Facilities was developed prior to the assessment of the impacts. Impacts from preconstruction activities were considered separately from general construction activities in the assessment of the environmental resources.

Environmental Report Documentation Impact: The Environmental Report will be revised to add a schedule of the preconstruction activities (Table 2-1) with the schedule for the Phase 1 and Phase 2 construction. Section 2.1.2.17 will be added to the Environmental Report and will read as follows:

2.1.2.17 Schedule of Preconstruction and Construction Activities

The schedule for the preconstruction and Phase 1 and Phase 2 construction is presented in Table 2-1. The schedule shows both preconstruction/activities that do not require an NRC exemption or NRC approval and those construction activities requiring an NRC exemption. The schedule assumes each of the activities is approved by the NRC and other agencies having jurisdiction. General facility construction of the Phase 1 and Phase 2 Facilities, other than the exempted and approved preconstruction will start only after NRC license approval.

Table 2-1 Proposed Schedule for Construction

Construction Activity	Schedule Start	Estimated Project Completion
Construction/Activity Not Requiring NRC Exemption		
Wildlife Baseline Study	3rd Quarter 2010	3rd Quarter 2011
Location and Staking of Under-ground and Above-ground Utilities	2nd Quarter 2011	3rd Quarter 2011
Survey and Staking of 40 Acre Facility Site within 640-acre Section	2nd Quarter 2011	2nd Quarter 2011
Testing of Existing Well Water to Determine Treatment Requirements	3rd Quarter 2011	4th Quarter 2011

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Construction Activity	Schedule Start	Estimated Project Completion
Soil Borings for Foundations for Buildings, Process Structures, Storage Pads and Roads	3rd Quarter 2011	4th Quarter 2011
Preconstruction Requiring NRC Exemption		
Site Clearing 40 Acres	3rd Quarter 2011	1st Quarter 2012
Pre-construction Erosion and Storm Water Run-off Control	3rd Quarter 2011	1st Quarter 2012
Installation of Truck Wash-off Station	4th Quarter 2011	1st Quarter 2012
Site Grading and Erosion Control/Sedimentation Retention for Buildings, Process Structures, Storage Pads and Roads	4th Quarter 2011	1st Quarter 2012
Main Entrance Roadbed with Drainage to 40-acre site	4th Quarter 2011	1st Quarter 2012
Construction/Office Trailer Installation	4th Quarter 2011	1st Quarter 2012
Electrical Substation Installation	4th Quarter 2011	1st Quarter 2012
Gas Main Installation to 40-acre Site	4th Quarter 2011	1st Quarter 2012
Administrative Building Shell Construction	4th Quarter 2011	1st Quarter 2012
Maintenance/Stores Building Shell Construction	4th Quarter 2011	1st Quarter 2012
Warehouse Building Shell Construction	4th Quarter 2011	1st Quarter 2012
Temporary Fencing	4th Quarter 2011	1st Quarter 2012
Facility Site Roadbeds and Gravel Parking Areas for Construction	1st Quarter 2012	1st Quarter 2012
Water Well Drilling	4th Quarter 2011	1st Quarter 2012
Geothermal Heat Pump Loop Installation	4th Quarter 2011	1st Quarter 2012
Firewater Tank Installation	4th Quarter 2011	1st Quarter 2012
Construction after NRC License		
Phase 1 Construction	2nd Quarter 2012	2nd Quarter 2013
Phase 2 Construction	2nd Quarter 2015	2nd Quarter 2016

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RAI 2

Provide Phase 1 and Phase 2 activities and impacts separately.

a. *Clarify and confirm that the proposed action consists only of Phase 1*

This information is needed to describe the proposed action and to develop cumulative effects analyses within the EIS. Cumulative effects include past, present, and reasonably foreseeable future actions. Phase 2 construction and operation will be considered reasonably foreseeable future actions relative to the proposed action, and their impacts will be evaluated in the cumulative effects analysis along with those of the proposed action and any other past, present, and reasonably foreseeable future actions. Therefore, it is necessary that these Phase 2 activities and their impacts be clearly distinguished throughout the ER from activities that are part of the proposed action.

RESPONSE:

The ER will be revised to be clear that the "Proposed License Action" is for Phase 1 Facility construction and operation. The "Proposed Action" term that was used in the Revision A of the Environmental Report" has been renamed "Proposed License Action."

This Environmental Report (ER) addresses cumulative effects from of the Phase 1 Facility, the incremental effects of a future expansion that results in the Phase 2 Facility and the cumulative effect of the Phase 2 Facility (Phase 1 Facility plus expansion, i.e. integrated IIFP Facility) in order for NRC to prepare an Environmental Impact Statement (EIS) for the Phase 1 and Phase 2 IIFP Facility.

The 2nd paragraph of the Environmental Report, Revision A, Section 1.2, "Purpose and Need for Proposed License Action," reads as follows:

IIFP is currently requesting an NRC license for a possession limit of 750,000 kilograms of depleted uranium (kg U) during Phase 1. Prior to the Phase 2 expansion, IIFP will prepare and submit an amended license application for the Phase 2 facility, including a possession of up to 2,200,000 kilograms of depleted uranium. The environmental impact evaluation conducted by this ER has been prepared for the Phase 1 and Phase 2 integrated facility. The average on-site inventories of uranium materials and major chemicals for both phases of the facility are presented in Table 1-1. IIFP has a written agreement with the New Mexico Environment Department (NMED) on maximum limits of total uranium and chemical inventories. (Revised-See_RAI ER-2b).

In addition, each environmental resource addressed in Chapter 4 will be revised to clarify that the assessed impact includes both Phase 1 and Phase 2 Facilities even though the Proposed License Action is the Phase 1 Facility. Chapter 4 will be restructured to address construction and operations for Phase 1, incremental impacts from the construction and operations for Phase 2, and combined impacts for the construction and operations of the integrated IIFP Facility (includes Phase 1 and Phase 2). The revised Chapter 4 that will be provided in a separate document as part of the official RAI ER response package. In addition, Figure 4-1 "Integrated Facility" a redacted figure will be submitted as an updated Site Plan electronic drawing (number 100-C-0001 Revision E) that can be viewed and printed as a legible 24" x 36" engineering drawing of the ER Figure 4-1.

Official Responses to Environmental Report RAIs

Environmental Report Documentation Impact: The 8th paragraph of Section 1.1, "General Description of the IIFP Facility and Proposed License Action," (renamed title) of the Environmental Report, Revision A, will be revised and will read as follows:

1.1 General Description of the IIFP Facility and Proposed License Action

Prec~~C~~onstruction of the Phase 1 ~~plant~~Facility is expected to begin in late 2011 and startup of operations is expected to begin in ~~the late~~mid-2013~~2~~. The ~~expansion~~ construction for ~~a~~expanding the Phase 1 Facility that results in a Phase 2 ~~plant~~ Facility is expected to begin in 2015 and operations start up in late 2016. The "Proposed Action" term that was used in the Revision A of the Environmental Report has been renamed "Proposed License Action." The ER does however include the Environmental Impacts and Cumulative Effects for both the Proposed License Action (which is the Phase 1 Facility) and the Phase 2 Facility (Phase 1 Facility plus expansion), as well as the incremental effects of the expansion, where applicable, in order for NRC to prepare an Environmental Impact Statement (EIS) for the Phase 2 IIFP Facility. Prior to the Phase 1 expansion resulting in the Phase 2 Facility, IIFP will prepare and submit an amended license application for the Phase 2 Facility. At the end of its useful life, the ~~plant~~IIFP Facility ~~would~~ will be decommissioned consistent with the decommissioning plan that is developed and submitted in the IIFP License Application, Chapter 10, "Decommissioning".

Environmental Report Documentation Impact: The 5th and 6th paragraphs of Section 2.1, "Proposed Action," (renamed "Proposed License Action") of the Environmental Report, Revision A, will be revised and a new 7th paragraph will be added as clarification and will read as follows:

2.1 Proposed License Action (renamed)

Phase 1, with a projected startup date of ~~late~~mid-2013~~2~~, consists mainly of two processes:

- DUF_6 de-conversion to depleted uranium tetrafluoride (DUF_4), i.e. the DUF_6 to DUF_4 plant.
- The Fluorine Extraction Process for producing SiF_4 and BF_3 by reacting the DUF_4 produced in the de-conversion step with the oxides of silicon (SiO_2) and boron (B_2O_3), respectively.

The P~~p~~hase 2 ~~plant f~~Facility, scheduled for startup in ~~mid~~late-2016 will have an additional process for direct de-conversion of DUF_6 to uranium oxide. The Proposed License Action addresses only the construction and operation of the Phase 1 IIFP Facility. Prior to a future expansion that results in the Phase 2 Facility, IIFP will prepare and submit an amended license application for the Phase 2 Facility.

This Environmental Report (ER) addresses cumulative effects from of the Phase 1 Facility, the incremental effects of a future expansion that results in the Phase 2 Facility and the cumulative effect of the Phase 2 Facility (Phase 1 Facility plus expansion, i.e. integrated IIFP Facility).

Environmental Report Documentation Impact: Chapter 4 of the Environmental Report, Revision A will be restructured to provide separate sections addressing construction and operations for Phase 1, incremental impacts from the construction and operations for Phase 2, and combined impacts for the construction and operations of the integrated IIFP Facility (includes Phase 1 and Phase 2). Remove Chapter 4 of the Environmental Report, Revision A in its entirety and replace with the revised Chapter 4 that will be provided in a separate document as part of the official RAI ER response package. The outline for Chapter 4 is shown below:

Official Responses to Environmental Report RAIs

4. ENVIRONMENTAL IMPACTS
   - 4.1 Land Use Impacts
     - 4.1.1 Phase 1 Facility
     - 4.1.2 Incremental Impacts from the Phase 2 Facility
     - 4.1.3 Combined Impacts from the Integrated Facility
     - 4.1.4 Decommissioning
     - 4.1.5 Cumulative Impacts
     - 4.1.6 Control of Impacts
     - 4.1.7 Comparative Land Use Impacts of Alternative Actions
   - 4.2 Transportation Impacts
     - 4.2.1 Transportation Mode
     - 4.2.2 Transportation Route
     - 4.2.3 Traffic Pattern
     - 4.2.4 Phase 1 Facility Impacts
     - 4.2.5 Incremental Impacts from the Phase 2 Facility
     - 4.2.6 Combined Impacts from the Integrated Facility
     - 4.2.7 Other Construction Transportation Impacts
     - 4.2.8 Radioactive Material Transportation
     - 4.2.9 Decommissioning
     - 4.2.10 Cumulative Impacts
     - 4.2.11 Impact Controls
     - 4.2.12 Comparative Transportation Impacts of Alternative Actions
   - 4.3 Geology and Soil Impacts
     - 4.3.1 Geology Impacts
     - 4.3.2 Soils Impacts
     - 4.3.3 Phase 1 Facility
     - 4.3.4 Incremental Impacts from the Phase 2 Facility
     - 4.3.5 Combined Impacts from the Phase 2 Facility
     - 4.3.6 Decommissioning
     - 4.3.7 Cumulative Impacts to Site Soils
     - 4.3.8 Impact Controls
     - 4.3.9 Comparative Geology and Soil Impacts of Alternative Actions
   - 4.4 Water Resources Impacts
     - 4.4.1 Surface Waters
     - 4.4.2 Receiving Waters
     - 4.4.3 Impacts on Surface Water and Groundwater Quality
     - 4.4.4 Hydrological System Alterations
     - 4.4.5 Hydrological System Impacts
     - 4.4.6 Ground and Surface Water Use
     - 4.4.7 Identification of Impacted Ground and Surface Water Users
     - 4.4.8 Decommissioning
     - 4.4.9 Identification of Predicted Cumulative Effects on Water Resources
     - 4.4.10 Control of Impacts to Water Quality
     - 4.4.11 Comparative Water Resources Impacts of Alternative Actions
   - 4.5 Ecological Resources Impacts
     - 4.5.1 Maps
     - 4.5.2 Proposed Schedule of Activities
     - 4.5.3 Phase 1 Facility
     - 4.5.4 Incremental Impacts from the Phase 2 Facility

4.9.7 Aesthetic and Scenic Quality Rating
4.9.8 Significant Visual Impacts
4.9.9 Visual Compatibility and Compliance
4.9.10 Cumulative Impacts to Visual/Scenic Quality
4.9.11 Comparative Visual/Scenic Resources Impacts of No-Action Alternative

4.10 Socioeconomic Impacts
4.10.1 Facility Construction
4.10.2 Facility Operation
4.10.3 Decommissioning
4.10.4 Cumulative Socioeconomic Impacts
4.10.5 Comparative Socioeconomic Impacts of No-Action Alternative Scenarios

4.11 Environmental Justice
4.11.1 Procedure and Evaluation Criteria
4.11.2 Results of Census Block Group Data
4.11.3 NRC Review of NEF Environmental Justice
4.11.4 Proposed License Action
4.11.5 Comparative Environmental Justice Impact of Alternative Actions

4.12 Public and Occupational Health Impacts
4.12.1 Nonradiological Impacts
4.12.2 Radiological Impacts
4.12.3 Environmental Effects of Accidents
4.12.4 Decommissioning
4.12.5 Cumulative Effects
4.12.6 Control of Impacts
4.12.7 Comparative Public and Occupational Exposure Impacts of No-Action Alternative Scenarios

4.13 Waste Management Impacts
4.13.1 Waste Descriptions
4.13.2 Site Preparation and Construction of the IIPF Facility
4.13.3 Waste Disposal from the Operation of the IIFP Facility
4.13.4 Waste Minimization
4.13.5 Decommissioning Impacts
4.13.6 Cumulative Impacts
4.13.7 Control of Impacts
4.13.8 Comparative Waste Management Impacts of No-Action Alternative Scenarios

RAI 2

Provide Phase 1 and Phase 2 activities and impacts separately.

b. *Provide separate quantitative Phase 1, Phase 2 (incremental), and cumulative (Phase 1 plus Phase 2) values for the following information described in Chapters 2 and 4 of the ER (IIFP, 2009a):*

- *all materials that serve as inputs and outputs to the deconversion process (a mass balance), including emissions and waste streams;*
- *workforce; and*
- *impacts.*

For example, separate the air quality impacts described in Section 4.6.2, "Air Quality Impacts from Operations" into impacts that will result from Phase 1 operations and impacts that will result from Phase 2 operations. Also, state that the cumulative impacts will be Phase 1 plus Phase 2, or describe the cumulative impacts, if they are not additive.

This information is needed to describe the proposed action and to develop cumulative effects analyses within the EIS. Cumulative effects include past, present, and reasonably foreseeable future actions. Phase 2 construction and operation will be considered reasonably foreseeable future actions relative to the proposed action, and their impacts will be evaluated in the cumulative effects analysis along with those of the proposed action and any other past, present, and reasonably foreseeable future actions. Therefore, it is necessary that these Phase 2 activities and their impacts be clearly distinguished throughout the ER from activities that are part of the proposed action.

RESPONSE:

Revision A of the Environmental Report was reviewed to ensure that each environmental resource was assessed for Phase 1, Phase 2, and cumulative impacts. Where each environmental resource was inadequately assessed, revisions were made to address those impacts for the construction and operation of each stage of the Facility. In addition, Chapter 4 was restructured for the most part to have separate sections addressing construction and operations for Phase 1, incremental impacts from the construction and operations for Phase 2, and combined impacts for the construction and operations of the integrated IIFP Facility (includes Phase 1 and Phase 2). This necessitated a rewrite of Chapter 4. The revised Chapter 4 will be provided in a separate document as part of the official RAI ER response package.

ER Figure 1-2 "Projected IIFP Facility Estimated Annual Capacity" will be removed and replaced to incorporate new calculations for an additional production line for BF_3 during the Phase 2 operations. Section 1.1 will be reviewed and revised accordingly. See also RAI 13a.

Table 1-1 will be replaced and named "Phase 1 and Phase 2 Facility Inventories of Major Chemical Materials") with the new table depicting the typical range of inventory for Phase 1 and integrated Phase 2, (see also RAI GI-7A). The range of inventory amounts does not necessarily represent minimum/maximum values. The range is derived from estimates of production through-put rates, plant process capabilities and additional contingencies. The contingencies included in the estimate are operational and material delivery situations that may cause variations in the facility raw material, work-

in-progress and product inventories but will be controlled such as not to cause licensed material possession limits to be exceeded.

Environmental Report Documentation Impact: For each environmental resource with quantifiable data, each section addressed Phase 1 impacts, incremental impacts, and impacts for Phase 2 (Phase 1 plus the expansion). See Environmental Report Documentation Impact RAI ER-2a addressing the Chapter 4 rewrite.

Environmental Report Documentation Impact: Former paragraph 3 of the Chapter 1, introduction will be revised for clarification (bullets excluded).

This Environmental Report (ER) addresses cumulative effects from of the Phase 1 Facility, the incremental effects of a future expansion that results in the Phase 2 Facility and the cumulative effect of the Phase 2 Facility (Phase 1 Facility plus expansion, i.e. integrated IIFP Facility). ~~This ER evaluates the environmental impacts of the proposed IIFP f~~Facility~~.~~ Accordingly, this document discusses the Proposed License Action, the need for and purposes of the Proposed License Action, applicable regulatory requirements, impacts, consequences, etc. as included in the following chapters:

Environmental Report Documentation Impact: (1) ER Section 1.1 (renamed) will be revised beginning with former paragraph seven. Figure 1-2 will be removed and replaced with updated data. See also RAI ER-13a.) (1) Remove Table 1-1 and replace with renamed Table 1-1 "Phase 1 and Phase 2 Facility Inventories of Major Chemical Materials" in ER Section 1.2, renamed "Purpose and Need for Proposed License Action." Section 1.2 will also include minor revisions to clarify Phase 1 and Phase 2, and to identify the values in Table 1-1; the section will read as follows:

1.1 General Description of the IIFP Facility and Proposed License Action

The future Phase 2 ~~f~~Facility is the result of ~~will be~~ an expansion of the Phase 1 ~~f~~Facility, which provides additional de-conversion capability using a chemical process for direct de-conversion of DUF_6 to uranium oxide and provides an additional line of production for BF_3. The Phase 2 Facility is not the expansion but it is the result of the Phase 1 Facility plus the expansion. The Phase 2 ~~plant~~ Facility (Phase 1 plus expansion) is scheduled to be built and operational by mid-2016. In the Phase 2 process, DUF_6 is received from the toll-service de-conversion customer, vaporized in containment-type autoclaves and fed to a first-stage reaction vessel where the DUF_6 reacts with a steam-HF vapor mix to produce depleted uranyl oxyfluoride (DUO_2F_2) and concentrated HF vapor. The DUO_2F_2 is withdrawn as a powder and fed to a second-stage reaction vessel and heated with steam to form uranium oxide powder and HF vapor. The HF vapors from both of the reaction vessel stages are condensed and fed to a fractional distillation column where AHF is withdrawn from the top of the column and aqueous HF is taken from the bottom and recycled as feed reactant to the first-stage reaction vessel. The AHF is packaged into approved tank trailers; the product is sold and shipped to customers for use in industrial chemical applications. Uranium oxide from the second-stage reaction vessel is packaged and shipped to an off-site licensed disposal facility.

Prec~~C~~onstruction of the Phase 1 ~~plant~~Facility is expected to begin in late 2011 and startup of operations is expected to begin in ~~the late~~mid-201~~3~~2. The ~~expansion~~ construction for ~~a~~expanding the Phase 1 Facility that results in a Phase 2 ~~plant~~ Facility is expected to begin in 2015 and operations start up in late 2016. The "Proposed Action" term that was used in the Revision A of the Environmental Report has been renamed "Proposed License Action." The ER does however include the Environmental Impacts and Cumulative Effects for both the Proposed License Action (which is the Phase 1 Facility) and the Phase 2

Facility (Phase 1 Facility plus expansion), as well as the incremental effects of the expansion, where applicable, in order for NRC to prepare an Environmental Impact Statement (EIS) for the Phase 2 IIFP Facility. Prior to the Phase 1 expansion resulting in the Phase 2 Facility, IIFP will prepare and submit an amended license application for the Phase 2 Facility. At the end of its useful life, the ~~plant~~IIFP Facility will ~~would~~ be decommissioned consistent with the decommissioning plan that is developed and submitted in the IIFP License Application, Chapter 10, "Decommissioning".

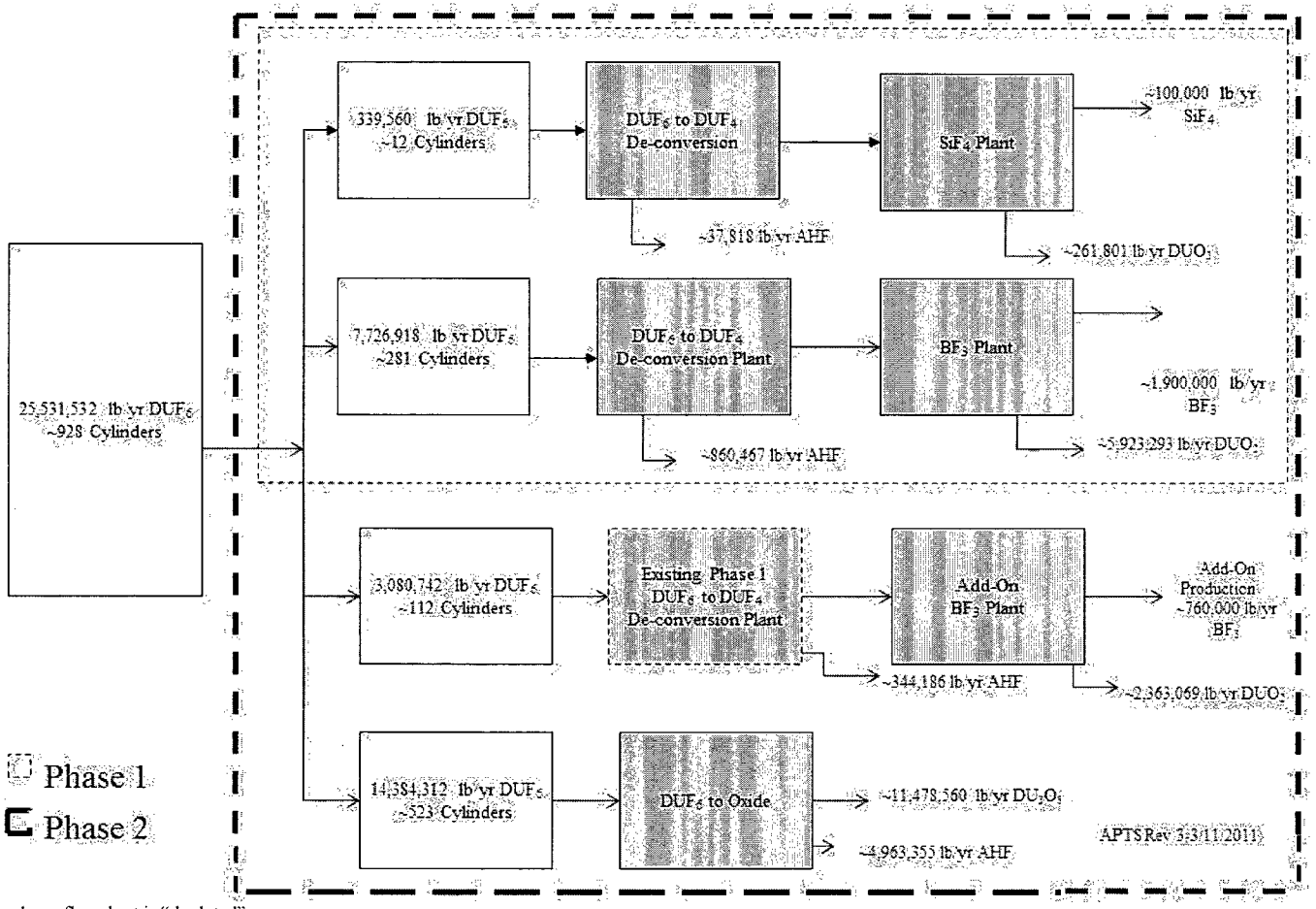
IIFP is designing the company's Phase 1 ~~plant~~ Facility annual capacity for de-converting approximately 300 DUF_6 cylinders per year; equivalent to about ~~7.3~~8 million pounds of DUF_6 per year (lb/yr) or ~~3.3~~3.6 million kilograms per year (kg/yr). The Phase 1 ~~plant~~ Facility also has a designed production capacity of ~~approximately~~ nearly 2 million lb/yr (0.9 million kg/yr) of specialty fluoride products, and 1 million lb/yr (0.45 million kg/yr) AHF.

Upon completion of the expansion that results in the Phase 2 Facility, the integrated facility will have an overall total de-conversion capacity of ~~nearly 800~~approximately 928 DUF_6 cylinders; about ~~21.7~~25.5 million lb/yr (~~9.8~~11.6 million kg/yr) DUF_6. ~~Nearly~~ Approximately ~~5.7~~6.2 million lb/yr (~~2.6~~2.8 million kg/yr) of AHF product is projected to be produced and sold and the specialty fluoride products will reach a capacity of 2.8 million lbs/yr (1.3 million kg/yr. A schematic of the process flows and designed operational capacity for the plant is presented as Figure 1-2. A more detailed description of the IIFP Facility processes and the Facility site plan illustrating buildings and layout are provided in Chapter 2 of the ER.

1.2 Purpose and Need for Proposed License Action

The Proposed License Action is the issuance of an NRC license under Title 10 Code of Federal Regulations Part 40, "Domestic Licensing of Source Material" for the IIFP ~~plant~~Facility. The license application and supporting documentation addresses pre-license construction (hereafter called preconstruction), construction after license approval and operation of a facility to utilize depleted uranium hexafluoride (DUF_6) to produce high-purity inorganic fluorides, uranium oxides, and anhydrous hydrofluoric acid. There is no known existing or planned private commercial de-conversion capacity in the U.S. or in this hemisphere. This ER is prepared and submitted for both the Phase 1 and Phase 2 Facilities.

IIFP is currently requesting an NRC license for a possession limit of 750,000 kilograms of depleted uranium (kg U) during Phase 1. Prior to the Phase 2 expansion, IIFP will prepare and submit an amended license application for the Phase 2 ~~f~~Facility, including a possession of up to 2,200,000 kilograms of depleted uranium. The environmental impact evaluation conducted by this ER has been prepared for the Phase 1 and Phase 2 integrated facility. The ~~average~~ estimated typical range of on-site inventories of



All uranium in the above flowchart is "depleted".

Figure 1-2 Projected IIFP Facility Estimated Annual Capacity

~~uranium materials and~~ major chemicals~~ materials~~ for both phases of the facility ~~are~~ is presented in Table 1-1. IIFP has a written agreement with the New Mexico Environment Department (NMED) on maximum ~~limits of total uranium and chemical inventories~~inventories of depleted uranium oxides and total depleted uranium that can be maintained on site.

Table 1- 1 Phase 1 and Phase 2 Facility Inventories of Major Chemical Materials

Material	Maximum Limit Agreement with New Mexico[1]	Physical Form: Liquid(l), Solid or Powder(s), Vapor or Gas(g)	Typical Range of Inventory Based on Projected Production Capacity and Requirements Phase 1	Typical Range of Inventory Based on Projected Production Capacity and Requirements Phase 2 (Phase 1 + expansion)
Total Depleted Uranium as "U"	4,851,000 lb (2,200,000 kg)	l, s, g	678,200-1,653,750 lb (307,575-750,000 kg)	678,200-4,851,000 lb (307,600-2,200,000 kg)
DUF_6	Not Applicable (NA)	l, s, g	219,700-1,105,000 lb (100,000-501,100 kg)	219,700-1,875,000 lb (100,000-850,300 kg)
DUF_4	NA	s	363,500-515,000 lb (164,900-233,600 kg)	363,500-1,268,000 lb (164,900-575,000 kg)
Uranium Oxides as DUO_2	2,205,000 lb (1,000,000 kg)	s	350,000-525,000 lb (158,700-238,100 kg)	350,000-1,564,000 lb (158,700-709,300 kg)
Hydrofluoric Acid (Hydrogen Fluoride)	NA	l, g	31,000-80,000 lb (14,100-36,300 kg)	31,000-150,000 lb (14,100-68000 kg)
SiF_4 (Packaged + in process)	NA	s, g	8,000-14,400 lb (3,600-6,500 kg)	8,000-14,400 lb (3,600-6500 kg)
BF_3 (Packaged +in process)	NA	s, g	7,200-54,800 lb (3,300-24,900 kg)	7,200-284,000 lb (3,300-129,000 kg)
KOH	NA	l	14,000-54,000 lb (6,300-24,600 kg)	14,000-54,000 lb (6,300-24,600 kg)
CaF_2	NA	s	2,400-80,500 lb (1,100-36,500 kg)	2,400-80,500 lb (1,100-36,500 kg)
$Ca(OH)_2$	NA	s	25,000-100,000 lb (11,300-45,300 kg)	25,000-100,000 lb (11,300-45,300 kg)

[1] Memorandum of Agreement of International Isotopes, Inc. and the New Mexico Environment Department, October 22, 2009.

Environmental Report Documentation Impact: Remove and replace Table 7-4 from Chapter 7 of the ER. Table 7-4 has been revised to provide separate Phase 1 and incremental Phase 2 values for workforce labor costs.

Table 7- 1 Estimated Construction Labor Costs

Cost Category	Phase 1 in Millions ($) (2009$)	Phase 1 3 Years Average Annual Cost in Millions ($) (2009$)	Incremental Expansion Resulting in a Phase 2 Facility in Millions ($) (2009$)	Incremental Expansion 3.5 Years Average Annual Costs in Millions ($) (2009$)
Construction & Installation	36-40	12-13.3	14-19	4-5.4
Engineering, Procurement & Construction Management	7-11	2.3-3.7	7-9	2-2.6
Project Management	2-3	0.7-1	1-1.5	0.3-0.4
Total	**45-54**	**15-18**	**22-29.5**	**6.3-8.4**

Environmental Report Documentation Impact: Revise Section 7.1.2 (renamed)of the ER, paragraphs one, two and three to incorporate the increased capacity in Figure 1-2 and milestone schedule Table 1-2 (see RAI ER-2b and ER 13a).

7.1.2 Basis of Construction and Operating Costs-Benefit Estimates ~~for the Proposed Action~~

The project construction and operation cost estimates assume that project detailed engineering begins in mid-~~2010~~2011, and some ~~pre-licensing construction~~preconstruction activities may start by ~~early~~ late 2011. Upon approval of the NRC license application, the full construction is expected to begin by the end of 2nd quarter 201~~1~~2 with startup of the Phase 1 operation for functional testing by ~~end~~ the 2nd quarter of 201~~2~~3. It is assumed that the facility would not reach significant production operating levels and receipt of revenue streams until mid- to-late 2013, after operational checkout and test production runs are completed and operations are well underway.

Beginning in late 2013, the production of the two fluorine extraction process (FEP) products (SiF_4 and BF_3) and the anhydrous hydrogen fluoride (AHF) by-product is assumed to ramp up over the following six months to approach the operational design capacity in 2014 of about 2 million lb/yr (0.9 million kg/yr) of specialty fluoride (FEP) products~~0.68 million kg/yr (1.5 million lb/yr) of SiF_4, 0.23 million kg/yr (0.5 million lb/yr) of BF_3~~, and about 1 million lb/yr (0.45 million kg/yr)~~0.36 million kg/yr (0.36 million lb/yr)~~ of AHF. The Phase 1 plant design capacity for de-conversion is approximately 8 million lb/yr (3.6 million kg/yr) DUF_6 ~~3.3 million kg/yr (7.3 million lb/yr)~~ or about ~~270~~-300 DUF_6 cylinders per year.

Costs and benefits estimates are also included for the Phase 2 ~~f~~Facility that would be constructed in the 2014-2015 timeframe. Phase 2 ~~f~~Facility startup is planned for mid-2016 resulting in an additional DUF_6 de-conversion design capacity of nearly 17.5 million lb/yr (7.9 million kg/yr) ~~6.5 million kg/yr (about 14.4 million lb/yr)~~. This will result in a total integrated plant de-conversion capacity of approximately 25.5 million lb/yr (11.6 million kg/yr) of DUF_6~~9.8 million kg/yr (21.7 million lb/yr),~~ or nearly ~~790~~-928 DUF_6 cylinders per year. The Phase 2 capacity provides for production of an additional ~~2.22 million kg/yr (4.9 million lb/yr)~~5.3 million lb/yr (2.4 million kg/yr) of AHF; increasing the total facility production capacity for AHF to about 6.2 million lb/yr (2.8 million kg/yr). ~~2.6 million kg/yr (5.7 million lb/year).~~

The FEP capacity increases by 0.76 million lb/yr (0.34 million kg/yr) to reach a total capacity of nearly 2.8 million lb/yr (1.25 million kg/yr).

RAI 2

Provide Phase 1 and Phase 2 activities and impacts separately.

c. *Describe Phase 2 construction activities. For example describe additional land disturbing activities and construction of buildings.*

This information is needed to describe the proposed action and to develop cumulative effects analyses within the EIS. Cumulative effects include past, present, and reasonably foreseeable future actions. Phase 2 construction and operation will be considered reasonably foreseeable future actions relative to the proposed action, and their impacts will be evaluated in the cumulative effects analysis along with those of the proposed action and any other past, present, and reasonably foreseeable future actions. Therefore, it is necessary that these Phase 2 activities and their impacts be clearly distinguished throughout the ER from activities that are part of the proposed action.

RESPONSE:

A description of the Phase 2 construction activities will be added to the Environmental Report.

Environmental Report Documentation Impact: A new section will be added to the Environmental Report, Revision A to describe the Phase 2 construction activities. Section 2.1.2.18 will be added and will read as follows:

2.1.2.18 Phase 2 Construction

The fourth construction stage is expected to begin in 2015 and will complete the Phase 2 Facility increasing UF_6 de-conversion capacity. During this construction stage, additions are planned for the UF_6 Autoclave Building, the Oxide Process Building, Direct Oxide Staging Building and the HF Distillation Annex.

The entire site clearing will occur during preconstruction and Phase 1 construction. No roads will need to be added. Minor revisions during Phase 2 construction to paved or concrete areas may be required. Hence, no major earth grading or movement will be necessary, but excavation will be required for sewer and building foundations and floors and for tie-ins for water, natural gas, and electrical utility lines.

Excavation for foundations will be minimized. Loose soil and/or damaged caliche will be removed prior to installation of foundations for seismically designed structures. Approximately 20% more building space will be added to the existing Phase 1 Facility. Considering the total 640-Section area, minimal soil disturbance will occur. Silt fences and straw bales will be used to control erosion and to protect undisturbed areas.

A construction/office trailer containing offices for construction supervisory personnel will be installed at a strategic location near the Phase 1 production areas. The construction trailer will not maintain any functional toilet facilities, so portable sanitary facilities will be stationed in locations convenient to Phase 2 construction areas. The construction trailer will require temporary 115/230 volt, single phase power. Temporary chain-link fencing with locking gates will be installed around the construction/office trailer and around each building shell for construction personnel entry and egress.

The Oxide Process Building and the Direct Oxide Staging Building are of structural steel beam and column construction with metal wall panels and with Class 1 metal roofs as approved by Factory Mutual (FM)-4450 (FM, latest edition) or as classified by Underwriters Laboratory (UL) standard 1256 (UL, latest edition). The first floor of each building is constructed of reinforced concrete with curbing to function as a containment-type barrier. The Oxide Process Building is 15.3 m x 15.3 m x 21.3 m (50 ft long x 50 ft wide x 70 ft) eve height, while the Direct Oxide Staging Building is 15.3 m x 6.2 m x 9.1 m (50 ft x 20 ft x 30 ft)]. The existing Phase 1 DUF_6 Autoclave Building [27.4 m x 18.3 m x 12.2 m (90 ft x 60 ft x 40 ft)] will be expanded an additional [27.4 m x 18.3 m x 12.2 m (90 ft x 60 ft x 40 ft)] to add three more autoclaves with support piping, valves, and control instrumentation.

The HF Distillation Annex is constructed of reinforced concrete floor slabs turned up to form containment-type barriers. The upper sections of these buildings are of concrete block construction with Class 1 metal roofs meeting FM and UL requirements as stated above. The HF Distillation Annex is 7.6 m x 6.1 m x 18.3 m (25 ft x 20 ft x 60 ft).

The process buildings are multi-story buildings where necessary to provide requirements for equipment space and to provide elevations for permitting gravity flow of particulate solids. The upper floors are configured such as to provide adequate room for equipment function and maintenance. The upper floor areas below equipment and piping containing powdered materials are constructed of reinforced concrete with curbing and seal coatings on floor and wall surfaces. Other upper floor areas of the buildings are constructed of metal grating or metal flooring.

See Section 2.1.4.1, "Process Buildings and Process Areas," for additional information on the process control rooms for the major processes, including appropriate monitoring, recording, alarm notification and control instrumentation.

Official Responses to Environmental Report RAIs

RAI 3

Provide additional information regarding taxes during construction and operation of the International Isotopes Fluorine Products, Inc. (IIFP) facility.

a. *Provide a description of any agreements, abatements, fees-in-lieu-of taxes, or any other arrangements (routine or special) that IIFP may have with property taxing entities for the facility.*

The above tax payment information will be needed to quantitatively evaluate the impacts of construction and operations property tax payments for the EIS socioeconomics analysis. This is important to clarify because payments made to local taxing entities can be considered large in comparison to other local municipality tax revenues, and can therefore be a significant factor in the socioeconomic impact analysis.

RESPONSE:

In New Mexico, Industrial Revenue Bonds (IRB) may be issued to finance privately-operated developed projects by a municipality, county or the New Mexico Finance Authority. The private party initiates the process by requesting that the government unit issue the bonds. IRBs offer some property and gross receipts tax relief to a company.

International Isotopes, Inc. as the parent corporation of IIFP has arranged through a Lease and Purchase Agreement a $72 million Industrial Revenue Bond with Lea County, New Mexico. The Issuer (Lea County) at the request of the Company (IIFP), or the Company as an agent for the Issuer will apply to the New Mexico Taxation and Revenue Department (TRD) for nontaxable transaction certificates to be issued by the Company to vendors in order to permit vendors to IIFP to claim deductions available under the New Mexico Gross Receipts and Compensating Tax Act. The receipts of vendors from the sale of tangible property to the Issuer (effectively IIFP) are deductible from the gross receipts (taxation). The use of such property is exempt from compensating tax (or property tax) to the fullest extent permitted under New Mexico Administrative Code.

Effectively, through the IRB agreement, IIFP is essentially exempt from the annual property tax. However, IIFP must pay to the Hobbs Municipal School District and to the New Mexico Junior College, an amount in lieu of property tax that IIFP would have been required to be paid as property tax if the IRB had not been issued and the IIFP property had, consequently, been subject to property tax. Property value in Lea County is assessed on one-third of book value. The property tax rate for school entities used to determine the amount of payment that IIFP would make in lieu of property school tax and the amount of annual property tax estimated for the Phase 1 Facility and the cumulative Phase 2 Facility are provided in responses to RAI 3.c and RAI 3.e.

Environmental Report Documentation Impact: None.

Official Responses to Environmental Report RAIs

RAI 3

Provide additional information regarding taxes during construction and operation of the International Isotopes Fluorine Products, Inc. (IIFP) facility.

b. *Sections 2.2, "Alternatives for Site Selection," 7.1.2, "Basis of Construction and Operating Costs-Benefit Estimates for the Proposed Action," and 7.1.5.7, "Insurance and Taxes" of the ER (IIFP, 2009a) state that the State of New Mexico and Lea County both have an incentive package that would exempt this facility from property and local taxes. Provide more details about this package, including whether it is final and what, if any, taxes are owed to the State and County.*

The above tax payment information will be needed to quantitatively evaluate the impacts of construction and operations property tax payments for the EIS socioeconomics analysis. This is important to clarify because payments made to local taxing entities can be considered large in comparison to other local municipality tax revenues, and can therefore be a significant factor in the socioeconomic impact analysis.

RESPONSE: The discussion of tax incentive agreements that are in place and property tax estimates are provided in response to RAIs 3.a, 3.c and 3.e. Other potential tax credit incentives may be available after the IIFP Facility is built and operational, but for purposes of the Environment Report, these are not final and not used in calculating tax exemptions in the cost-benefit analysis impact.

Environmental Report Documentation Impact: Paragraph 2 of Section 7.1.5.7 of the IIFP Environmental Report Revision A has been revised to explain applicable property tax exemptions and to show the taxes by Phase 1 and Phase 2 Facility operations. This change is shown in the Environmental Report Documentation Impact response to RAI 3.e.

Official Responses to Environmental Report RAIs

RAI 3

Provide additional information regarding taxes during construction and operation of the International Isotopes Fluorine Products, Inc. (IIFP) facility.

c. *Provide estimated property tax payments including those paid on land and everything attached to the land and property taxes on company equipment and material during preconstruction and construction.*

The above tax payment information will be needed to quantitatively evaluate the impacts of construction and operations property tax payments for the EIS socioeconomics analysis. This is important to clarify because payments made to local taxing entities can be considered large in comparison to other local municipality tax revenues, and can therefore be a significant factor in the socioeconomic impact analysis.

RESPONSE:

Property taxes are generally exempt as part of the Lea County, New Mexico incentive package and the issued Industrial Revenue Bond (IRB) agreement that IIFP has with Lea County as previously discussed in response to RAI 3.a. Two school districts are not exempt by the IRB; the Hobbs Municipal School District and the New Mexico Junior College. For this "non-exempt" property tax, the IRB provides that IIFP pay in lieu of the property tax an amount equal to the amount of property taxes that IIFP would have been required to pay if the IRB had not be issued and the project property had, consequently, been subject to property taxation. Property taxes in Lea County are assessed on one-third of the book value of tangible property and the tax rate for the two non-exempt school district property taxes. The annual payment to the Hobbs Municipal School District is based on $7.60 tax rate per $1000 of assessed property value. The annual payment to the New Mexico Junior College is based on a tax rate of $4.30 per $1000 of assessed property value. Based on the estimated assessed value of the IIFP land and attachments to the land and on the equipment and materials and the estimated tax rate, the estimated property taxes during preconstruction and construction of the IIFP Facility are provided below.

Table RAI 3-c Estimated Property Taxes for the IIFP Facility During Phase 1

Year	Activity	Tax on Land & Attachments	Property Tax on Equipment and Materials
2011	Preconstruction	$ 15,900	$ 22,700
2012	Phase 1 Construction	$ 87,800	$ 173,200
2013	Continued Phase 1 Construction	$ 46,500	$ 246,900
Future Years	Future construction (such as the expansion to Phase 2) would occur in the years of operations and is included in the annual property taxes of the operating facility		

Environmental Report Documentation Impact: None.

Official Responses to Environmental Report RAIs

RAI 3

Provide additional information regarding taxes during construction and operation of the International Isotopes Fluorine Products, Inc. (IIFP) facility.

d. Identify the taxing entities including the two educational entities, as stated in Section 7.1.5.7, "Insurance and Taxes," of the ER (IIFP, 2009a), that would tax the plant and what percentage of the payments would be sent to each entity. (Examples of taxing entities include state, county, municipality, local schools/colleges, and independent irrigation districts.)

The above tax payment information will be needed to quantitatively evaluate the impacts of construction and operations property tax payments for the EIS socioeconomics analysis. This is important to clarify because payments made to local taxing entities can be considered large in comparison to other local municipality tax revenues, and can therefore be a significant factor in the socioeconomic impact analysis.

RESPONSE:

The entities that require tax payments are the Federal government, State of New Mexico, and Lea County New Mexico. Additionally, in lieu of exempt property taxes as discussed in to response to RAI 3.a above, IIFP will make annual payments to the Hobbs Municipal School District and the New Mexico Junior College.

The IIFP employer's part of social security and Medicare employment taxes will be paid at the Federal rate; currently 6.2 per cent of the first $106,800 of earnings per employee for social security and 2.9% of each employee's total annual earnings for the Medicare tax. Also, IIFP will pay New Mexico unemployment tax at a rate of 5.4% on the first $21,900 of each employee's earnings. The Federal unemployment tax rate will be 0.8% on the first $7,000 of each employee's earnings. The cost for these payroll related taxes are included in the estimated overhead rates of the annual labor cost estimates.

Property taxes are generally exempt as part of the Lea County and State of New Mexico site incentive package as discussed in response to RAI 3.a. Two educational local school taxes are not part of the exemption. As shown in the revised Table 7-11 below, the payments in lieu of property taxes are about 4.2% of the total tax revenues estimated to benefit the State and Lea County. Of that payment amount, about 64% will be distributed to the Hobbs Municipal School District and the remaining 36% will be distributed to the New Mexico Junior College. The annual estimate of those taxes is based on a formula and information provided by Lea County. Those annual property taxes are explained in response to RAI 3.e and discussed in the revision being made to the Paragraph 2 of Section 7.1.5.7 of the IIFR Environmental Report as shown in the RAI 3.e response. Table 7-11 provides the estimated tax revenues to Lea County and the State of New Mexico for Phase 1, increment of expansion to a Phase 2 Facility and the cumulative facility taxes totaled for the 40-year life of the IIFP Facility.

Corporate income taxes for the IIFP Facility operations are calculated on an average federal rate of 35% of taxable income plus the State of New Mexico income tax of 7.5% of taxable income. The State income taxes are credited as being an offsetting expense on federal taxes. Approximately, 47.5% of the State and Lea County total tax revenue (shown in Table 7-11) from the IIFP Facility is corporate income tax to the State.

Official Responses to Environmental Report RAIs

The Gross Revenue Tax represents about 48.35% of the total tax from IIFP and is distributed 93% to the State of New Mexico and the remaining 7% to Lea County, as shown in Table 7-11 below.

Environmental Report Documentation Impact: The original Table 7-11 of the IIFP Environmental Report Revision A is being deleted and replaced with the new Table 7-11 below to show tax revenues to the State and Local Community by type and IIFP Facility operational phases.

Table 7-11 Estimated Tax Revenues to State and Local Community for Total 40-Year Period (Expressed in Thousands of Dollars in Year 2009$)

Type of Tax[a]	New Mexico Phase 1	Lea County Phase 1	New Mexico Phase 2 Increment	Lea County Phase 2 Increment	Cumulative Phase 1 and 2 Total
Gross Receipts Tax					
High Estimate	118,100	8,800	165,400	12,400	304,700
Low Estimate	87,100	6,500	121,900	9,100	224,600
NM Corp. Income Tax[b]					
High Estimate	77,200	N/A[c]	222,400	N/A[c]	299,600
Low Estimate	57,100	N/A[c]	164,300	N/A[c]	221,400
Property Tax					
High Estimate	Note "d"	13,700	Note "d"	12,700	26,400
Low Estimate	Note "d"	8,700	Note "d"	8,100	16,800
TOTAL TAX ESTIMATE RANGE	144,200-195,300	15,200-22,500	286,200-387,800	17,200-25,100	462,800-630,700

[a] Tax Values based on Tax Rates as of 2009
[b] Based on Average Earnings over the 40-Yr Analysis Period for the Proposed IIFP Facility
[c] Allocation would be made to the State of New Mexico
[d] Payments in lieu of property tax is distributed to school tax for Hobbs Municipal District and New Mexico Junior College

Official Responses to Environmental Report RAIs

RAI 3

Provide additional information regarding taxes during construction and operation of the International Isotopes Fluorine Products, Inc. (IIFP) facility.

e. *Provide estimated property tax payments including those paid on land and everything attached to the land and property taxes on company equipment and material during operations.*

The above tax payment information will be needed to quantitatively evaluate the impacts of construction and operations property tax payments for the EIS socioeconomics analysis. This is important to clarify because payments made to local taxing entities can be considered large in comparison to other local municipality tax revenues, and can therefore be a significant factor in the socioeconomic impact analysis.

RESPONSE:

Property taxes are generally exempt as part of the Lea County, New Mexico incentive package and the issued Industrial Revenue Bond (IRB) agreement that IIFP has with Lea County as previously discussed in response to RAI 3.a. Two school districts are not exempt by the IRB; the Hobbs Municipal School District and the New Mexico Junior College. For this "non-exempt" property tax, the IRB provides that IIFP pay in lieu of the property tax an amount equal to the amount of property taxes that IIFP would have been required to pay if the IRB had not be issued and the project property had, consequently, been subject to property taxation. Property taxes in Lea County are assessed on one-third of the book value of tangible property and the tax rate for the two non-exempt school district property taxes. The payment to the Hobbs Municipal School District is based on a tax rate of $4.30 per $1000 of assessed property value. The annual payment paid to the New Mexico Junior College is based on a tax rate of $7.60 per $1000 of assesses property value. Based on the estimated assessed value of the IIFP land and attachments to the land and on the equipment and materials and the estimated tax rate, the estimated property taxes during the operating periods of the IIFP Facility are provided below:

The estimated annual property taxes for the IIFP Facility during the operations period are discussed in paragraph 7.1.5.7 of the IIFP Environmental Report. This paragraph is being updated as explained below.

Environmental Report Documentation Impact: Paragraph 2 of Section 7.1.5.7 of the IIFP Environmental Report Revision A has been revised to update estimates of property taxes and to show a break out of the taxes by Phase 1 and Phase 2 Facility operations.

Property and local taxes are generally exempt as part of the Lea County and State of New Mexico site incentive package and the Industrial Revenue Bond (IRB) issuance that IIFP has with Lea County New Mexico. ~~There are two educational local school taxes that are not part of the exemption.~~ Two school districts are not exempt by the IRB; the Hobbs Municipal School District and the New Mexico Junior College. For this "non-exempt" property tax, the IRB provides that IIFP pay in lieu of the property tax an amount equal to the amount of property taxes that IIFP would have been required to pay if the IRB had not be issued and the project property had, consequently, been subject to property taxation. The annual estimate of those property taxes is based on a formula and information provided by Lea County. The property taxes (payments in lieu of) are estimated at an average of $217,500-$342,500 annually during the Phase 1 Facility operations period and $420,000-$660,000 annually for the Phase 2 Facility operations (the combined integrated Phase 1 and Phase 2 Facility). ~~$350,000 annually for the total Phase 1 and Phase 2 facility.~~

RAI 4

Provide clarifications and additional data for the cost-benefit analysis.

a. *Clarify whether replacement capital costs are construction or operations costs. Although replacement capital covers activities that are similar to construction, these activities occur after 2017, and thus would occur during the operations phase of the project. Chapter 7, "Cost-Benefit Analysis" of the ER (IIFP, 2009a) presents replacement capital as construction.*

The information in Chapter 7, "Cost-Benefit Analysis," of the ER (IIFP, 2009a) either needs clarification or additional data, as described above, to perform a quantitative assessment of costs and benefits in the EIS.

RESPONSE:

Replacement costs are capital costs that occur during the facility operations period in order to replace equipment, materials and infrastructure as needed to maintain the IIFP in a safe and reliable condition. As such, those replacement costs are considered as operation capital costs rather than facility construction costs. Replacement capital is estimated and expended as a cash flow in the year(s) in which equipment or infrastructure is being replaced.

In addition to replacement capital, annual expenses for maintenance material are required for repair and normal maintenance of equipment and infrastructure. These annual maintenance material costs are estimated at about 3% to 5% of the facility direct capital cost. Operating supplies are also included in this category. Operating supplies, for example, include items such as gloves, personnel safety items, office supplies, lab chemicals, lubricating oils, custodial supplies, etc. Annual operating supplies are estimated at about 0.75% to 1.2% of the direct capital costs.

Environmental Report Documentation Impact: The first two paragraphs of Section 7.1.5.4 of the IIFP Environmental Report Revision A is being updated as follows:

Material required for repair and normal replacement of equipment and infrastructure is estimated at 3% to 5% of the plant direct capital cost not including engineering procurement and construction management costs or contingency. Additionally, replacement capital is estimated and expended as a cash flow in the year in which the equipment or infrastructure would be replaced. Replacement costs are capital costs that occur during the facility operations period in order to replace equipment, materials and infrastructure as needed to maintain the IIFP in a safe and reliable condition. As such, those replacement costs are considered as operation (capital) costs rather than facility construction costs.

Operating supplies are also included in this category. Operating supplies, for example, include items such as gloves, personnel safety items, office supplies, lab chemicals, lubricating oils, custodial supplies, etc. Operating supplies are estimated at 0.75% to 1.25% of the direct capital costs. These percentages are based on published cost methodology data and experiences at similar facilities (Timmerhaus, Peters and West, 2003b).

Official Responses to Environmental Report RAIs

RAI 4

Provide clarifications and additional data for the cost-benefit analysis.

b. Provide an estimate of the distribution of replacement expenditures over/between Phase 1 and the Phase 2 increment.

The information in Chapter 7, "Cost-Benefit Analysis," of the ER (IIFP, 2009a) either needs clarification or additional data, as described above, to perform a quantitative assessment of costs and benefits in the EIS.

RESPONSE: Table 7-5 of the IIFP Environmental Report Revision A will be revised to show the refined updated replacement capital cost estimate. All of the estimated replacement capital costs over the 40 year analysis period occur after the expansion of the Phase 1 Facility to the Phase 2 Facility (the Phase 1 plus the add on expansions that result in the combined facility, that is the Phase 2 Facility). All of the replacement occurs during the time of the Phase 2 Facility operation because Phase 1 operates only about 3-4 years before the expansions are completed that result in the Phase 2 cumulative facility operation.

During the time frame between 2017 and 2050, approximately 51% of the replacement capital cost is related to equipment and infrastructures that were installed in the Phase 1 construction. The remaining 49% of replacement costs are for the incremental equipment and infrastructures that were installed in the expansion to a Phase 2 Facility. Thus, the average annual replacement cost distributed to the Phase 1 initial equipment/infrastructure is about 1-1.2 million dollars and that for the incremental equipment and infrastructure for expansion to the Phase 2 Facility is approximately 0.9-1.2 million dollars per year.

Environmental Report Documentation Impact: Table 7-5 of the IIFP Environmental Report Revision A is revised to read as follows:

Table 7- 5 Estimated Replacement Capital

Time Period of Replacement Cost Projected to be Incurred	Range of Estimated Replacement Costs (Millions of $) (Expressed in 2009 Dollars)
Years 2010 through 2016 (Phase 1 Operation only until late 2016)	No replacement capital; all is estimated initial capital
2017-2027 (Phase 1 + Phase 2 Operation)	~~9-12~~ 9-11
2028-2037 (Phase 1 + Phase 2 Operation)	~~28-36~~ 35-43
2038-2050 (Phase 1 + Phase 2 Operation)	~~23-36~~ 32-39
Total 40 Year Analysis Period	**~~60-85~~ 76-93**

Official Responses to Environmental Report RAIs

RAI 4

Provide clarifications and additional data for the cost-benefit analysis.

c. *Provide the cost of raw materials. Section 7.1.5.1, "Raw Materials", of the ER (IIFP, 2009a) does not present the cost of raw materials, other than that they are "low."*

The information in Chapter 7, "Cost-Benefit Analysis," of the ER (IIFP, 2009a) either needs clarification or additional data, as described above, to perform a quantitative assessment of costs and benefits in the EIS.

RESPONSE: The FEP and De-conversion processes have a relatively low raw materials cost for a chemical plant. The fluoride value in the FEP and AHF products comes from extracted fluorine of the waste uranium enrichment customer tails material. The extracted fluoride from DUF_6 is the major raw material of the FEP process. As a raw material, it effectively has a negative cost because IIFP is paid a service fee (revenue) for the de-conversion of DUF_6.

Raw material usages were determined from process flow sheets and mass balance calculations for each respective process. Raw material and treating agent unit costs were obtained from vendors and supplier budget-type quotes for purposes of the economic analyses. Some factors were applied in consideration of the estimated efficiencies of utilization as opposed to theoretical stoichiometry. Annual costs were derived for each production case by using the unit cost and production volumes.

Table 7-6, "Major Raw Materials and Treating Agents," will be revised to provide unit cost for the major raw materials and treating agents. The raw material and treating agent costs for the Phase 1 Facility are estimated to be $1.89 million (yr-2009$) per year. The Phase 2 Facility (cumulative of Phase 1 and expansion to the Phase 2 Facility) raw material and treating agent costs are estimated to be $2.71 million annually.

Environmental Report Documentation Impact: Table 7-6 from the Environmental Report Section 7.1.5.1, "Raw Materials," will be revised to add the unit costs for the raw materials. Table 7-6 will read as follows:

Table 7- 6 Major Raw Materials and Treating Agents

Raw Material or Treating Agent	Units Costs 2009 US$	Comments
Silicon dioxide (SiO_2)	$1.20/pound	Alternative to be evaluated in pilot test. Diatomaceous earth of much less unit cost is an option contingent on the product purity tests.
Boric Oxide (B_2O_3)	$1.50/pound	Used in production of BF_3 product.
Calcium Hydroxide [$Ca(OH)_2$]	$0.06/pound	Used in hydrated lime treatment of process water to regenerate KOH and neutralize small amounts of aqueous HF wastes
Potassium Hydroxide (KOH)	$0.28/pound	Treating agent bought as a 45% solution and used in scrubbing emissions from process off-gas vents. The agent is regenerated and recycled to avoid process water discharges and to minimize usage. Small make-up is required.
Hydrogen-gaseous (H_2)	$1.75/100 cubic feet	Estimates for economic analysis obtained from vendor quotes assuming that supply would come from a on-site packaged system.

RAI 4

Provide clarifications and additional data for the cost-benefit analysis.

d. Provide the utilities cost for Phase 1 and an incremental amount for Phase 2. Section 7.1.5.2, "Utilities," of the ER (IIFP, 2009a) presents costs for operations utilities. The text states that Phase 2 operations add significantly to Phase 1 utilities cost. The value of 2.5 to 3.5 million dollars per year is provided, but it is not clear for which phase this value applies.

The information in Chapter 7, "Cost-Benefit Analysis," of the ER (IIFP, 2009a) either needs clarification or additional data, as described above, to perform a quantitative assessment of costs and benefits in the EIS.

RESPONSE: The last paragraph of Section 7.1.5.2 will be revised to provide separate estimated annual cost of utilities for Phase 1 only and the Phase 2 (combined Phase 1 plus expansion to Phase 2) Facilities.

The type of utilities are the same for the Phase 1 and Phase 2 Facility, but there is a significant increase in usage of utilities amounts beginning in about 2016, especially in steam and electricity, for the integrated Phase 2 Facility after the Oxide plant add-on.

Environmental Report Documentation Impact: The Environmental Report, Section 7.1.5.2, "Utilities," will be revised to show updated utility costs Phase 1 and Phase 2 operations and the last two paragraphs of the Section will read as follows:

The type of utilities are the same for the Phase 1 and Phase 2 Facility, but there is a significant increase in usage of utilities amounts beginning in about 2016, especially in steam and electricity, for the integrated Phase 2 Facility after the Oxide plant add-on.

~~Approximately 2.5 to 3.3 million dollars per year of utilities are estimated to be procured from utility companies located in the region or State thereby benefiting the local and State economies.~~

Approximately 1.5 million dollars (2009$) per year of utilities are estimated to be procured during the Phase 1 Facility operations each year between 2013 and the beginning of 2017. An additional 1.7 million dollars (2009$) per year of utilities are estimated to be procured each year from 2017 through 2050 as a result of the expansion to the Phase 2 Facility. After the expansion to Phase 2, the cumulative utilities procured will cost about 3.2 million dollars (2009$) each year from utility companies located in the region or State thereby benefiting the local and State economies.

Official Responses to Environmental Report RAIs

RAI 4

Provide clarifications and additional data for the cost-benefit analysis.

e. *Provide sufficient data to quantify the sales and distribution annual costs for Phase 1 and Phase 2 increment. Section 7.1.5.3, "Selling and Distribution," of the ER (IIFP, 2009a) states, "The sales and distribution annual costs ... are estimated at 8% of the projected product cost." It is not clear what the value of the "projected product cost" is.*

The information in Chapter 7, "Cost-Benefit Analysis," of the ER (IIFP, 2009a) either needs clarification or additional data, as described above, to perform a quantitative assessment of costs and benefits in the EIS.

RESPONSE: The subject sales and distribution annual costs apply only to the high purity SiF_4 product. There is no direct selling of the de-conversion services, other than agreements and contracts arranged between IIFP and suppliers/customers. Likewise the BF_3 product and AHF by-product are sold in bulk quantities by contract agreements to a relatively small number of customers, thus the sales and marketing cost are minimal and absorbed in the product unit pricing. The added 8% sales and distribution is applied to the SiF_4 because it is packaged and sold in smaller quantities to several customers thus requiring more marketing effort and incurring more direct distribution costs.

The annual cost for the sales and distribution costs is estimated to be $200,000 to $250,000 based on year-2009$. There is essentially no difference in selling and distribution costs of the Phase 1 and future Phase 2 Facility cumulative costs because the amount of SiF_4 production does not increase by the expansion to a Phase 2 Facility

Environmental Report Documentation Impact: None.

Official Responses to Environmental Report RAIs

RAI 4

Provide clarifications and additional data for the cost-benefit analysis.

f. Provide a breakdown of operations and maintenance materials costs for Phase 1 and Phase 2 increment. Section 7.1.5.4, "Operational and Maintenance Materials," of the ER (IIFP, 2009a) states that the average cost of maintenance materials and operating supplies are 3 to 4 million dollars annually, but the distinction between Phase 1 and Phase 2 is not clear.

The information in Chapter 7, "Cost-Benefit Analysis," of the ER (IIFP, 2009a) either needs clarification or additional data, as described above, to perform a quantitative assessment of costs and benefits in the EIS.

RESPONSE: The Phase 1 Facility annual maintenance material costs and operating supplies costs are estimated at 2.1million dollars (in yr-2009$) and 0.63 million dollars (in yr-2009$), respectively. Those annual costs increase for the incremental expansion to a Phase 2 Facility by $1.2 million per year for maintenance materials and by $0.36 million per year for operating supplies. The cumulative Phase 1 and Phase 2 Facility annual maintenance material costs are estimated to be $3.3 million and the annual operating supplies costs are estimated to be $0.99 million. All these costs are expressed in year-2009$.

Environmental Report Documentation Impact: None.

RAI 4

Provide clarifications and additional data for the cost-benefit analysis.

g. *Clarify Phase 1 and Phase 2 incremental costs for waste disposal. Table 7-10, "Estimated Range of Annual Waste Disposal Costs," of the ER (IIFP, 2009a) presents the annual waste disposal costs for Phase 1 and Phase 2, but from the values, it seems that the Phase 2 column is the cumulative Phase 1 and 2 waste disposal costs. If the Phase 2 costs are cumulative of Phase 1 and 2, then so state.*

The information in Chapter 7, "Cost-Benefit Analysis," of the ER (IIFP, 2009a) either needs clarification or additional data, as described above, to perform a quantitative assessment of costs and benefits in the EIS.

RESPONSE: Phase 2 costs are cumulative of Phase 1 and Phase 2 costs because the Phase 2 facility results from an expansion of the Phase 1 Facility.

Environmental Report Documentation Impact: Table 7-10 and its introduction in Section 7.1.5.6 of the IIFP Environmental Report Revision A will be changed to read as follows:

Table 7-10 provides a range of estimated waste disposal costs by type of waste. The Phase 2 costs are cumulative of Phase 1 and Phase 2 costs because the Phase 2 Facility results from an expansion of the Phase 1 Facility.

Table 7- 10 Estimated Range of Annual Waste Disposal Costs

Type Waste	Phase 1 Facility (Thousand of $ Per Year in 2009$)	Phase 1 and Phase 2 Facility (cumulative) (Thousands of $ Per Year in 2009$)
Depleted uranium oxide	2,600 ~~-5,500~~ 6,970	8,000-~~16,000~~ 22,500
Other process LLW	~~1,000-1,700~~ 250-400	~~1,100-1,800~~ 260-450
Misc. LLW	225-350	450-650
RCRA	~~9-20~~ 9- 35	~~14-25~~ 14-45
Sanitary	~~1-2~~ 2-3	~~1-2~~ 2-3

RAI 4

Provide clarifications and additional data for the cost-benefit analysis.

h. Provide 2010 market value per pound of each Fluorine Extraction Process product.

The information in Chapter 7, "Cost-Benefit Analysis," of the ER (IIFP, 2009a) either needs clarification or additional data, as described above, to perform a quantitative assessment of costs and benefits in the EIS.

RESPONSE: Product market prices (in yr-2010$) of $30 per pound and $10 per pound are used for high-purity SiF_4 and for BF_3, respectively. The de-conversion service fees are expected to range from $ 2.40 per pound DUF_6 de-converted, where oxide disposal costs are paid (pass-through cost) by the customer, to $3.95 per pound where oxide disposal costs are not a pass-through cost to the customer. De-conversion costs are expressed in year-2010$. For purposes of the Environmental Report cost-benefit calculations, IIFP used a $3.85 (yr-2009$) per pound DUF_6 estimated fee because oxide disposal costs are included in the cost-benefit information provided in the Environmental Report (See line item #1 of Table 7-10 in the report).

Environmental Report Documentation Impact: None.

RAI 5

Provide clarifications and additional information regarding UO_2 shipments.

a. *Clarify the packaging and number of packages per shipment for UO_2 byproduct material. Section 3.2.2.2, "Facility Operation Phase," of the ER (IIFP, 2009a) states that low-level radioactive waste (LLW) will be shipped in 55-gallon drums, with 20-25 drums per shipment. State whether these drums will contain the UO_2 byproduct from the deconversion process, and whether the LLW discussed in Section 3.2.2.2 "Facility Operation Phase" is the UO_2 byproducts from the deconversion process. If not, describe the packaging and truck loading for UO_2 and describe the material that is considered LLW referred to in Section 3.2.2.2 "Facility Operation Phase."*

The ER (IIFP, 2009a) provides scaled information from other analyses, but it does not present sufficiently detailed information for a project-specific analysis. The requested data above are necessary to perform a radiological consequence analysis with the computer code, RADTRAN, for the IIFP project in order to assess the associated transportation impacts in the EIS.

RESPONSE: Packaging will be in DOT-approved containers that meet the requirements of 40 CFR 71 (CFR, 2009m) and 49 CFR 171-173 (CFR, 2009hh; CFR, 2009ii). The exact amount (poundage) to be included in a container will depend on the bulk density of the material being shipped such that the number of containers in the shipments will meet the DOT load requirements. All LLW will be disposed of off site, at a licensed burial site, including uranium oxides produced from the deconversion process.

For number of packages per shipment of each type of low-level wastes, see the Environmental Report Documentation Impact for RAI 5-e.

Environmental Report Documentation Impact: The 1st paragraph of Section 3.2.2.2, "Facility Operations Phase," subheading "Uranium Wastes" will be revised to provide this clarification and will be revised to read as follows:

Uranium Wastes

Radioactive waste materials will be transported in packages by truck via highway in accordance with 40 CFR 71 (CFR, 2009m) and 49 CFR 171-173 (CFR, 2009hh; CFR, 2009ii). Detailed descriptions of radioactive waste materials which will be shipped from the IIFP facility for disposal are presented in ER Section 3.12, "Waste Management." These wastes will typically be packaged and shipped in 55-gal drums ~~using trucks with a nominal 20 to 25 drums per truck shipment~~. The exact amount (poundage) to be included in a container will depend on the bulk density of the material being shipped such that the number of containers in the shipments will meet the DOT load requirements. All LLW will be disposed of off site, at a licensed burial site, including depleted uranium oxides produced from the deconversion process.

Official Responses to Environmental Report RAIs

RAI 5

Provide clarifications and additional information regarding UO_2 shipments.

b. *Provide the radionuclide inventory (in curies) of each package of UO_2 and the expected dose rate at contact, 1 meter, and 2 meters.*

The ER (IIFP, 2009a) provides scaled information from other analyses, but it does not present sufficiently detailed information for a project-specific analysis. The requested data above are necessary to perform a radiological consequence analysis with the computer code, RADTRAN, for the IIFP project in order to assess the associated transportation impacts in the EIS.

RESPONSE: Table RAI 5-e-1 will be used in the review and modeling for incident-free transport of radioactive material. Table 4-4, "Annual Incident-Free Transportation Radiological Dose to the Public and Worker," will be updated for the uranium oxide and miscellaneous LLS shipments.

Table RAI 5-e-1, Shipments of Miscellaneous Low-Level Waste

Waste Material	Material Mass (lb/drum)	Depleted Uranium Mass (lb/drum)	Curies (Ci/drum)	Expected Dose Rates		
				Contact	1 meter	2 meters
Activated Alumina	98	4.9	8.00 E-04	6.19E-02	6.35E-03	2.03E-03
Air Ventilation Filters	14	0.28	4.57 E-05	3.72E-03	3.78E-04	1.21E-04
Carbon	350	7	1.14 E-03	6.18E-02	6.46E-03	2.04E-03
Clinkers of DUF_4	1,000	750	1.22 E-01	1.55E+00	1.64E-01	5.05E-02
Coke	140	1.4	2.29 E-04	1.71E-02	1.77E-03	5.63E-04
Contaminated Pallets	210	2.1	3.43 E-04	2.32E-02	2.41E-03	7.65E-04
Crushed Drums	392	3.9	6.37 E-04	2.55E-02	2.65E-03	8.33E-04
Dust Collector Bags	70	10.5	1.71 E-03	1.38E-01	1.41E-02	4.52E-03
Ion Exchange Resin	343	10.3	1.68 E-03	8.58E-02	8.99E-03	2.84E-03
Radioactive Waste Trash	70	0.7	1.14 E-04	9.25E-03	9.45E-04	3.02E-04
Scrap Metal	392	3.9	6.37 E-04	2.55E-02	2.65E-03	8.33E-04
Sintered Metal Tubes	700	7	1.14 E-03	3.71E-02	3.92E-03	1.22E-03
Sodium Fluoride	679	6.8	1.11 E-03	1.99E-02	2.08E-03	6.47E-04
Spent Blasting Grit	1,000	50	8.16 E-03	1.94E-01	2.07E-02	6.39E-03
Uranium Oxide	1,000	881.48	1.44E-01	1.83E+00	1.93E-01	5.95E-02

Reference: DOE-STD-1136-2009, Section 2.5
Curies/drum = (pounds DU per drum) x (453.59 gram/pound) x (3.6E-7 Curies/gram)

Official Responses to Environmental Report RAIs

Environmental Report Documentation Impact: Remove Chapter 4 of the Environmental Report, Revision A in its entirety and replace with the revised Chapter 4 that will be provided in a separate document as part of the official RAI ER response package. Table 4-4, "Annual Incident-Free Transportation Radiological Dose to the Public and Worker," will be revised based on these shipments of depleted uranium oxide and miscellaneous low-level wastes shown in Table 3-2, "Shipments Based on Estimated Annual Quantities of Low Level Waste Generated at the IIFP Facility." See Environmental Report Documentation Impact for ER RAI-5e.

Official Responses to Environmental Report RAIs

RAI 5

Provide clarifications and additional information regarding UO_2 shipments.

c. *Clarify the number of shipments of UO_2. In the ER, Table 4-4, "Annual Incident-Free Transportation Radiological Dose to the Public and Worker," states that there will be 450 shipments of uranium oxide and miscellaneous LLW.*

The ER (IIFP, 2009a) provides scaled information from other analyses, but it does not present sufficiently detailed information for a project-specific analysis. The requested data above are necessary to perform a radiological consequence analysis with the computer code, RADTRAN, for the IIFP project in order to assess the associated transportation impacts in the EIS.

RESPONSE:

The DOT maximum axle net load limit is approximately 42,000 pounds. Density of the uranium oxide is approximately 2.5g/cc or 156 lb/ft^3. Drums can be filled to approximately 1,000 lb per drum plus 50 lb drum weight or a total 1,050 lb/drum of UO_2. Shipments of UO_2 will be expected to contain approximately 40 drums. Assuming consistent bulk density and 40 drums per shipment then Phase 1 UO_2 shipments will be approximately 145-155. Other LLW materials will not be bulk density consistent, therefore, bulk density will be much smaller and trailers will be space limited or volume limited, not weight limited. In Phase 2 (Phase 1 plus the expansion) operations, DUO_2 total shipments are approximately 450-500 annually.

Environmental Report Documentation Impact: Remove Chapter 4 of the Environmental Report, Revision A in its entirety and replace with the revised Chapter 4 that will be provided in a separate document as part of the official RAI ER response package. Section 4.2.8.2, "Radioactive Treatment and Packaging Procedure," will be revised to provide this clarification. Section 4.2.8.2 will read as follows:

4.2.6~~8~~8.2 Radioactive Treatment and Packaging Procedure

Specific handling of radioactive and mixed wastes is discussed in detail in ER Section 3.12, "Waste Management." Packaging of product material, radioactive waste and mixed waste will be in accordance with ~~plant~~ facility implementation procedures that follow 10 CFR 71 (CFR, 2009m) and 49 CFR 171-173 (CFR, 2009hh; CFR, 2009ii). Depleted UF_6 shipments will have additional packaging controls in accordance with ANSI N14.1 (ANSI, 2001). Waste materials will have additional packaging controls in accordance with each respective disposal or processing site's acceptance criteria (CFR, 2009m). The DOT maximum axle net load limit is approximately 42,000 pounds. Density of the depleted uranium oxide is approximately 2.5g/cc or 156 lb/ft^3. Drums can be filled to approximately 1,000 lb per drum plus 50 lb drum weight or a total 1,050 lb/drum of DUO_2. Shipments of DUO_2 will be expected to contain approximately 40 drums. Assuming consistent bulk density and 40 drums per shipment then Phase 1 DUO_2 shipments will be approximately 145 to 155 annually. In Phase 2 operations, DUO_2 total shipments are approximately 450-500 annually.

Other LLW materials will not be bulk density consistent, therefore, bulk density will be much smaller and trailers will be space limited or volume limited, not weight limited. These LLW materials will include:

- Activated Alumina,
- Activated Carbon
- Air Ventilation Filters,
- Carbon,
- Clinkers of DUF_4,
- Coke,
- Contaminated Pallets,
- Crushed Drums,
- Dust Collector Bags,
- Ion Exchange Resin,
- Radioactive Waste Trash,
- Scrap Metal,
- Sintered Metal Tubes,
- Sodium Fluoride, and
- Spent Blasting Sand/Grit.

Official Responses to Environmental Report RAIs

RAI 5

Provide clarifications and additional information regarding UO_2 shipments.

d. Clarify if each of the 450 shipments contains 20-25 drums of UO_2 per shipment.

The ER (IIFP, 2009a) provides scaled information from other analyses, but it does not present sufficiently detailed information for a project-specific analysis. The requested data above are necessary to perform a radiological consequence analysis with the computer code, RADTRAN, for the IIFP project in order to assess the associated transportation impacts in the EIS.

RESPONSE:

The DOT maximum axle load limit is net 42,000 pounds. Density of the uranium oxide is approximately 2.5g/cm^3 or 156 lb/ft^3. Drums can be filled to approximately 1,000 lb/drum plus 50 lb-drum weight or a total 1,050 lb/drum of DUO_2. Shipments of DUO_2 are expected to contain approximately 40 drums. Assuming consistent bulk density and 40 drums per shipment then Phase 1 DUO_2 shipments will be approximately 145-155. In Phase 2 integrated operations, DUO_2 total shipments are approximately 450-500. Other LLW materials will not be bulk density consistent, therefore, bulk density will be much smaller and trailers will be space limited or volume limited, not weight limited.

Environmental Report Documentation Impact Remove Chapter 4 of the Environmental Report, Revision A in its entirety and replace with the revised Chapter 4 that will be provided in a separate document as part of the official RAI ER response package. See Environmental Report Documentation Impact for ER RAI 5-c for the revision of Section 4.2.8.2, "Radioactive Treatment and Packaging Procedure."

Official Responses to Environmental Report RAIs

RAI 5

Provide clarifications and additional information regarding UO_2 shipments.

e. *Describe the shipment of "miscellaneous LLW" in terms of types of packages, number of packages, and curie content.*

The ER (IIFP, 2009a) provides scaled information from other analyses, but it does not present sufficiently detailed information for a project-specific analysis. The requested data above are necessary to perform a radiological consequence analysis with the computer code, RADTRAN, for the IIFP project in order to assess the associated transportation impacts in the EIS.

RESPONSE: Table RAI 5-e-1 will be used in the review and modeling for incident-free transport of radioactive material. Table 4-4, Annual Incident-Free Transportation Radiological Dose to the Public and Worker will be updated for the uranium oxide and miscellaneous LLS shipments. Section 3.2.2.2, "Facility Operations Phase," will be revised to show the shipments of low-level wastes generated during the operations of the IIFP Facility. Also, Table 3-2, "Shipments Based on Estimated Annual Quantities of Low Level Waste Generated at the IIFP Facility," will be added. Additionally, Section 4.2.4.3, "Operations" will be revised to show the impact from the low-level waste shipments along with other operational deliveries and UF_6 cylinder shipments.

Table RAI 5-e-1, Shipments of Miscellaneous Low-Level Waste

Waste Material	Estimated Material Mass (lb/drum)	Depleted Uranium Mass (lb/drum)	Curies (Ci/drum)
Activated Alumina	98	4.9	8.00 E-04
Activated Carbon	140	7	1.14E-03
Air Ventilation Filters	14	0.28	4.57 E-05
Carbon Filter Elements	350	7	1.14 E-03
Clinkers of DUF_4	1,000	750	1.22 E-01
Coke	140	1.4	2.29 E-04
Contaminated Pallets	210	2.1	3.43 E-04
Crushed Drums	392	3.9	6.37 E-04
Dust Collector Bags	70	10.5	1.71 E-03
Ion Exchange Resin	343	10.3	1.68 E-03
Miscellaneous	70	2.1	3.43E-04
Radioactive Waste Trash	70	0.7	1.14 E-04
Scrap Metal	392	3.9	6.37 E-04
Sintered Metal Tubes	700	7	1.14 E-03
Sodium Fluoride	679	6.8	1.11 E-03
Spent Blasting Grit/Sand	1,000	50	8.16 E-03
Uranium Oxide	1,000	881.48	1.44E-01

Reference: DOE-STD-1136-2009, Section 2.5
Curies/drum = (pounds DU per drum) x (453.59 gram/pound) x (3.6E-7 Curies/gram)

Environmental Report Documentation Impact: The 2nd paragraph of the Environmental Report Section 3.2.2.2, "Facility Operations Phase," subheading "Uranium Wastes" will be revised to show the shipments of low-level wastes generated during the operations of the IIFP Facility to read as follows:

Low-Level Radioactive Waste (LLW) generated from the processing the DUF_6 will be shipped to an off-site disposal facility. The majority of wastes generated during the operations of the IIFP Facility will be LLW. The maximum number of shipments from each of the LLWs expected to be generated during Phase 1 and the Phase 2 operations (Phase 1 plus Phase 2) is shown in Table 3-2. The expected disposal site is the Energy Solutions facility at Clive, UT. A potential site that could be licensed in the future is the Waste Control Specialists facility near Eunice, NM. Refer to ER Section 3.12.2.~~2~~, "~~Radioactive and Mixed Waste~~Solid Waste Managements," for disposition options of other wastes.

Environmental Report Documentation Impact: Section 4.2.4.3, "Operations", paragraph four will be revised to show the impact from the low-level waste shipments along with other operational deliveries and UF_6 cylinder shipments.

The ~~maximum~~ potential increase to traffic due to operational deliveries and waste removal shipments during Phase 1 is estimated at about 2,650 round trips per year. This value is based on estimated ~~55~~700 radiological shipments per year plus 1,950~~2,100~~ non-radiological shipments per year. Thus, an average of approximately 10 round trips for operational deliveries and waste management will occur daily during a normal 5-day work week. During Phase 2 integrated operations, the number of radiological shipments per year will increase by 2,150 or a total of 4,100 shipments annually. Operational delivery and waste removal shipments will increase by 16 round trips per year. Compared with the transportation commuting statistics in Lea County from the 2000 census data and the traffic count on the specific highways, this increase in traffic from operational deliveries and waste removal will be SMALL either for Phase 1 or Phase 2 operations. One mitigation measure to be considered by IIFP is to schedule operations worker shift changes and truck shipments for off-peak traffic periods, when practical. For cumulative impacts for Phase 1 operations and Phase 2 construction, see Section 4.2.10, "Cumulative Impacts."

Environmental Report Documentation Impact: Remove and replace Chapter 4 of the ER, Revision A in its entirety and replace with the revised Chapter 4 that will be provided in a separate document as part of the official RAI ER response package. Section 4.2.6.3, "Incident-Free Scenario Radiological Dose," will be revised to incorporate the revised shipments of uranium oxides and low-level wastes. Former Table 4-5 (now 4-4), "Annual Incident-Free Transportation Radiological Dose to the Public and Worker (Phase 2)," will be revised based on these shipments of uranium oxide and miscellaneous low-level wastes shown in Table 3-2, "Shipments Based on Estimated Annual Quantities of Low Level Waste Generated at the IIFP Facility" (removed and replaced, as shown below) as well as, new Table 4-4, "Annual Incident-Free Transportation Radiological Dose to the Public and Worker (Phase 1)."See Section 4.2.6.3, "Incident–Free Scenario Radiological Dose," of the enclosed rewrite to Chapter 4.

Table 3-2 Shipments Based on Estimated Annual Quantities of Low Level Waste Generated at the IIFP Facility

Material	Estimated Mass (lb/drum)	Phase 1 Wastes			Phase 2 Wastes		
		Range (lb)	Drums	Shipments per yr*	Range (lb)	Drums	Shipments per yr*
Activated Alumina	98	2,000-4,000	20-40	1	2,000-4,000	20-40	1
Air Ventilation filters	14	50-100	4-8	0.2	65-100	5-8	0.2
Carbon	350	25,000-35,000	71-142	3.6	25,000-35,000	71-142	3.6
Off-specification DUF_4	1,000	5,000-10,000	5-10	0.3	5,000-10,000	5-10	0.3
Coke	140	8,000-12,000	58-86	2.2	8,000-12,000	58-86	2.2
Contaminated Pallets	210	1,000-4,000	14-57	1.4	3,000-12,000	43-171	4.3
Crushed Drums	392	1,000-3,000	3-8	0.2	2,000-5,000	3-8	0.2
Dust Collector Bags	70	500-3,000	7-43	1.1	1,000-3,000	14-43	1.1
Ion Exchange Resin	343	1,000-2,000	3-6	0.2	2,000-4,000	6-12	0.3
Radioactive Waste Trash[1]	70	35,000-55,000	500-785	19.6	70,000-100,000	1,000-1,429	35.7
Scrap metal	392	4,000-8,000	10-20	0.5	12,000-16,000	30-40	1
Sintered Metal Tubes	700	1,000-2,000	2-3	0.1	2,000-3,000	3-5	0.1
Sodium Fluoride	679	2,000-4,000	3-6	0.2	2,000-4,000	3-6	0.2
Spent Blasting Grit[2]	1,000	100-200	0	0	100-200	0	0
Uranium Oxide	1,000	2,800,000-6,200,000	2,800-6,200	148[3]	8,700,000-20,000,000	8,700-20,000	476[3]
*Maximum Shipments at 40 drums per trailer or 42,000 pounds/shipment				179			527[1]

[1] waste not compacted.
[2] Blasting grit to be recycled.
[3] Theoretically. Phase 1 shipments show average 145 to 155, while Phase 2 shipments should average 218 to 450.

Official Responses to Environmental Report RAIs

RAI 6

Provide the radionuclide inventory of an "empty" DUF_6 cylinder.

Table 4-4, "Annual Incident-Free Transportation Radiological Dose to the Public and Worker," of the ER (IIFP, 2009a) refers to 789 shipments of empty DUF_6 cylinders. It is expected that these empty cylinders would contain a heel comprised of nonvolatile uranium progeny and possibly some non-sublimated DUF_6. The curie content of these progeny would be considerably less than the heel described in Table D-1 of the Louisiana Energy Services (LES) EIS (NRC, 2005), which represents an enriched heel. The ER does not provide the radionuclide inventory of an empty cylinder and, thus, does not present sufficiently detailed information for a project-specific analysis. The requested data are necessary to perform a radiological consequence analysis with the computer code RADTRAN for the IIFP project in order to assess the associated transportation impacts in the EIS.

RESPONSE:

Nonvolatile uranium progeny produced in a DUF_6 cylinder are assumed to remain after the cylinder is initially emptied. The heel of an empty cylinder generally contains no more than 50 pounds of depleted UF_6 plus the quantities of progeny generated from decay of a full DUF_6 cylinder. Table RAI 6-1 illustrates the radionuclide inventory 30 days after the cylinder is initially emptied. Inventory values were determined by Microshield® 8.03 software.

Table RAI 6-1 Radionuclide Inventory of an Empty DUF_6 Cylinder

Isotope	Inventory 30 Days After Cylinder is Initially Emptied (Ci)
Ac-227	1.82E-05
Bi-210	6.33E-07
Bi-211	1.82E-05
Bi-214	1.73E-06
Fr-223	2.52E-07
Pa-231	3.65E-05
Pa-234	4.34E-03
Pa-234m	2.71E+00
Pb-210	6.34E-07
Pb-211	1.82E-05
Pb-214	1.73E-06
Po-210	6.15E-07
Po-211	4.96E-08
Po-214	1.73E-06
Po-215	1.82E-05
Po-218	1.73E-06
Ra-223	1.82E-05
Ra-226	1.73E-06
Rn-219	1.82E-05
Rn-222	1.73E-06
Th-227	1.79E-05

Isotope	Inventory 30 Days After Cylinder is Initially Emptied (Ci)
Th-230	1.61E-04
Th-231	3.45E-02
Th-234	2.71E+00
Tl-207	1.81E-05
U-234	6.60E-04
U-235	6.39E-05
U-238	5.01E-03

Environmental Report Documentation Impact: None

Official Responses to Environmental Report RAIs

RAI 7

Provide information regarding hydrogen generation to support the description of the proposed action.

a. Describe how hydrogen would be generated for use in the deconversion processes.

The ER (IIFP, 2009a) contains limited information on the source of a major reactant. This information is needed in order to completely describe the proposed action within the EIS.

RESPONSE:

Hydrogen is generated on demand using a vendor supplied packaged unit. The hydrogen is produced by steam reforming natural gas followed by purification using pressure swing adsorption (PSA). This type system is being used at the DOE de-conversion plants (7 total units) and also in other commercial facilities for on-demand supply of hydrogen.

Environmental Report Documentation Impact: The hydrogen supply will be inserted into the 4th paragraph of Section 2.1.3.2 with resulting in two paragraphs. The 4th paragraph and the resulting new paragraph will read as follows:

The DUF_6 cylinder is placed in a containment-type autoclave; where the contents are vaporized. The DUF_6 vapor is fed to a reaction vessel where it undergoes exothermic reaction with hydrogen to produce DUF_4 and AHF. The gaseous hydrogen supply for the DUF_6 to DUF_4 reaction vessel is generated on site using a vendor supplied packaged system of a safe design commonly used in other industrial applications. The hydrogen is produced by steam reforming natural gas followed by purification using pressure swing adsorption (PSA). The packaged unit is located about 107 m (350 ft) from the DUF_4 Process Building and about 91 m (300 ft) from the nearest other process buildings. The generated hydrogen from the remote unit is piped through a relatively small diameter (about 1-2 in) steel pipe on an elevated pipe rack that has mechanical barrier protection. The piping enters the upper level of the DUF_4 Process Building near the top of the reaction vessel mixing head. A minimum length of piping run is used inside the building. The unit when operating generates approximately 6-9 lb/hr of gaseous hydrogen at about 24.7 to 29.7 psia pressure. The unit starts and operates automatically to produce high purity hydrogen (> 99%) and is designed with internal safety system controls. The DUF_6 to DUF_4 process demand is estimated to be approximately 7 lb/hr. Theoretically, 12 to 18 lb/hr natural gas will be required to produce 6 to 9 lb/hr hydrogen. Assuming a unit efficiency of approximately 75% will place the natural gas requirement at 16 to 24 pounds per hour or 359 to 539 SCFH. The 7 lb/hr demand will require 18.7 lb/hr or 420 SCFH of natural gas at 75% unit efficiency. No storage equipment is provided for the accumulation of hydrogen. However, a small surge tank is located at the package unit for pressure and flow control.

The DUF_4 solid powder is continuously withdrawn from the reaction vessel bottom through a cooling screw mechanism and transferred to storage hoppers. A ~~2~~two-stage dust collector system is provided to control and recycle DUF_4 dusts that are internal to the solids handling equipment and generated by air or gas flows associated with the handling equipment. The DUF_4 in the storage hoppers is transferred to the FEP plant for use as raw material feed in producing SiF_4 and BF_3.

Official Responses to Environmental Report RAIs

RAI 7

Provide information regarding hydrogen generation to support the description of the proposed action.

b. Provide the production capacity of the hydrogen plant and the demand for hydrogen.

The ER (IIFP, 2009a) contains limited information on the source of a major reactant. This information is needed in order to completely describe the proposed action within the EIS.

RESPONSE:

The hydrogen generating unit is capable of supplying approximately 6-9 lb/hr of gaseous hydrogen at about 24.7 to 29.7 psia. The DUF_6 to DUF_4 process demand is estimated to be approximately 7 lb/hr. The unit starts and operates automatically to produce high purity hydrogen (> 99%) and is designed with internal safety system controls.

Environmental Report Documentation Impact: The 4th paragraph of Section 2.1.3.2 will be revised, resulting in two paragraphs. See Environmental Report Documentation Impact for RAI ER 7-a above.

Official Responses to Environmental Report RAIs

RAI 7

Provide information regarding hydrogen generation to support the description of the proposed action.

c. State the hydrogen storage capacity.

The ER (IIFP, 2009a) contains limited information on the source of a major reactant. This information is needed in order to completely describe the proposed action within the EIS.

RESPONSE:

No storage equipment is provided for the accumulation of hydrogen. However, a small surge tank is located at the package unit for pressure and flow control.

Environmental Report Documentation Impact: The 4th paragraph of Section 2.1.3.2 will be revised, resulting in two paragraphs. See Environmental Report Documentation Impact for RAI ER 7-a above.

Official Responses to Environmental Report RAIs

RAI 7

Provide information regarding hydrogen generation to support the description of the proposed action.

d. State whether the provided natural gas demand includes the demand for generation of hydrogen. If not, provide the amount of natural gas required for hydrogen generation.

The ER (IIFP, 2009a) contains limited information on the source of a major reactant. This information is needed in order to completely describe the proposed action within the EIS.

RESPONSE:

Theoretically, 12 to 18 lb/hr natural gas will be required to produce 6 to 9 lb/hr hydrogen. Assuming a unit efficiency of approximately 75% will place the natural gas requirement at 16 to 24 pounds per hour or 359 to 539 SCFH. The 7 lb/hr demand will require 18.7 lb/hr or 420 SCFH of natural gas at 75% unit efficiency.

Environmental Report Documentation Impact: The 4th paragraph of Section 2.1.3.2 will be revised, resulting in two paragraphs. See Environmental Report Documentation Impact for RAI ER 7-a above.

Official Responses to Environmental Report RAIs

RAI 8

Provide additional information regarding air emissions during construction of the IIFP facility.

a. *Provide the site-specific assumptions that went into the estimates of the air emissions resulting from operation of off-road construction equipment in Table 4-11 of the ER (IIFP, 2009a). Include vehicle types and assumptions regarding quantity totals that make up the thirteen support vehicles and the thirteen construction vehicles.*

The requested air emissions and refueling information is needed to properly assess the impacts to air quality during construction.

RESPONSE:

The makeup and quantities of the thirteen construction vehicles and the twelve support vehicles used in Phase 1 construction are shown in Table RAI 8-a-1 with the calculation of their contribution to each of the emission parameters. See the attached guidance on page 159 for calculations of emissions, "Non-Radiological Emissions and Impacts for Phase 1 and Phase 2 Construction Activities." It is expected that construction in Phase 1 will last approximately 18 months. Some the equipment will be utilized the entire time, some will be sequential, and others may be only intermittent. The calculation of Phase 1 emissions and impacts are shown in Tables RAI-8-a 1 through RAI-8-a-12 in Section A below.

For Phase 2 construction, 14 pieces of equipment are anticipated to be involved in construction activities. Those pieces of construction equipment are shown in Table RAI 8-a-12 with the calculation of their contribution to each of the emission parameters. Phase 2 construction is estimated to last one year. As above, some the equipment will be utilized the entire time, some will be sequential, and others may be only intermittent. The calculations of Phase 2 emissions and impacts are shown in Tables RAI-8-a-13 through RAI-8-a-22 in Section B below.

Official Responses to Environmental Report RAIs

A. Phase 1 Construction Emissions and Impacts

Table RAI 8-a-1 Average Horsepower Hours per Month

Equipment	Hp	Factor	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
			Hp-hours											
Tractor/backhoe	150	0.21	10080	10080	10080	10080	0	0	0	0	0	0	0	0
Grader	400	0.59	37760	37760	37760	37760	0	0	0	0	0	0	0	0
Excavator	500	0.59	47200	47200	47200	47200	0	0	0	0	0	0	0	0
Dump Truck	300	0.21	20160	20160	20160	20160	6300	6300	6300	6300	6300	6300	6300	6300
Dozer	400	0.59	37760	37760	37760	37760	0	0	0	0	0	0	0	0
Air Compressor	325	0.43	0	0	0	0	44720	44720	44720	44720	44720	44720	44720	44720
Concrete Pump	125	0.43	0	0	0	0	8600	8600	8600	8600	8600	8600	8600	8600
Crane	175	0.43	0	0	0	0	12040	12040	12040	12040	12040	12040	12040	12040
Fuel Truck	250	0.59	7375	7375	7375	7375	7375	7375	7375	7375	7375	7375	7375	7375
Water Truck	250	0.59	7375	7375	7375	7375	7375	7375	7375	7375	7375	7375	7375	7375
Forklift	200	0.59	5900	5900	5900	5900	37760	37760	37760	37760	37760	37760	37760	37760
Flatbed, 2 ton	200	0.59	0	0	0	0	37760	37760	37760	37760	37760	37760	37760	37760
Generator	33	0.43	0	0	0	0	4540.8	4540.8	4540.8	4540.8	4540.8	4540.8	4540.8	4540.8
Welder	50	0.21	0	0	0	0	1680	1680	1680	1680	1680	1680	1680	1680
Small Truck	150	0.21	3150	3150	3150	3150	7875	7875	7875	7875	7875	7875	7875	7875

This table identifies the assumed tailpipe emission rate for each pollutant and each item of construction equipment. These values are based on AP-42 non-road emission factors for diesel-fired equipment. These emission factors have been adjusted to account for AP-42 transient adjustment factors and deterioration factors. These emission factors apply to Phase 1 and to Phase 2 equipment.

Table RAI 8-a-2 Tailpipe Emission Factors

Equipment	Max Hp	Load Factor	NO_2	CO	PM_{10}	$PM_{2.5}$	VOC	SO_2	HAPs	Diesel Fuel Burned
			lb/hp-hr							
Tractor/backhoe	150	0.21	1.19E-02	5.06E-03	1.31E-03	1.28E-03	1.72E-03	3.44E-04	4.69E-04	3.67E-01
Grader	400	0.59	1.28E-02	4.63E-03	5.13E-04	4.96E-04	4.79E-04	3.60E-04	4.62E-04	3.67E-01
Excavator	500	0.59	1.27E-02	4.63E-03	5.12E-04	4.95E-04	4.78E-04	3.59E-04	4.64E-04	3.67E-01
Dump Truck	300	0.21	1.37E-02	4.44E-03	1.19E-03	1.16E-03	1.59E-03	3.65E-04	4.60E-04	3.67E-01
Dozer	400	0.59	1.28E-02	4.63E-03	5.13E-04	4.96E-04	4.79E-04	3.60E-04	4.62E-04	3.67E-01
Air Compressor	325	0.43	1.34E-02	3.02E-03	3.86E-04	3.71E-04	4.57E-04	3.57E-04	4.64E-04	3.67E-01
Concrete Pump	125	0.43	1.19E-02	1.40E-02	2.37E-03	2.30E-03	2.67E-03	3.52E-04	4.63E-04	3.67E-01
Crane	175	0.43	1.25E-02	1.73E-03	5.33E-04	5.07E-04	6.93E-04	3.60E-04	4.67E-04	3.67E-01
Fuel Truck	250	0.59	1.18E-02	2.64E-03	6.82E-04	6.62E-04	7.23E-04	3.58E-04	4.59E-04	3.67E-01
Water Truck	250	0.59	1.18E-02	2.64E-03	6.82E-04	6.62E-04	7.23E-04	3.58E-04	4.59E-04	3.67E-01
Forklift	200	0.59	1.18E-02	2.65E-03	6.86E-04	6.61E-04	7.29E-04	3.56E-04	4.66E-04	3.67E-01
Flatbed, 2 ton	200	0.59	1.18E-02	2.65E-03	6.86E-04	6.61E-04	7.29E-04	3.56E-04	4.66E-04	3.67E-01
Generator	33	0.43	1.05E-02	3.45E-03	7.27E-04	7.27E-04	5.91E-04	4.09E-04	4.55E-04	4.08E-01
Welder	50	0.21	1.09E-02	8.73E-03	1.55E-03	1.55E-03	1.36E-03	3.64E-04	4.55E-04	4.08E-01
Small Truck	150	0.21	1.18E-02	2.64E-03	6.82E-04	6.62E-04	7.23E-04	3.58E-04	4.59E-04	3.67E-01

NO_2– Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

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This table summarizes the results from the individual 12-month tables calculating the pollutant tailpipe emissions as a product of the horsepower-hours and emission factor. This table also calculates the maximum monthly tailpipe emissions and annual tailpipe emissions for each pollutant.

Table RAI 8-a-3 Summarize Tailpipe Emissions

Month	NO_2	CO	PM_{10}	$PM_{2.5}$	VOC	SO_2	Combustion HAPs	Diesel
MONTH 01	2240	771	116	113	125	63.5	81.8	64,871
MONTH 02	2240	771	116	113	125	63.5	81.8	64,871
MONTH 03	2240	771	116	113	125	63.5	81.8	64,871
MONTH 04	2240	771	116	113	125	63.5	81.8	64,871
MONTH 05	2161	595	125	121	138	63.1	81.7	64,857
MONTH 06	2161	595	125	121	138	63.1	81.7	64,857
MONTH 07	2161	595	125	121	138	63.1	81.7	64,857
MONTH 08	2161	595	125	121	138	63.1	81.7	64,857
MONTH 09	2161	595	125	121	138	63.1	81.7	64,857
MONTH 10	2161	595	125	121	138	63.1	81.7	64,857
MONTH 11	2161	595	125	121	138	63.1	81.7	64,857
MONTH 12	2161	595	125	121	138	63.1	81.7	64,857

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

Table RAI 8-a-4 Calculate Average Tailpipe Emission Rates

Average Area Emission Rate	NO_2	CO	PM_{10}	$PM_{2.5}$	VOC	SO_2	Combustion HAPs
	$g/s/m^2$						
1-hr	1.82E-05	6.26E-06	1.01E-06	9.79E-07	1.12E-06	5.15E-07	6.64E-07
3-hr	1.82E-05	6.26E-06	1.01E-06	9.79E-07	1.12E-06	5.15E-07	6.64E-07
8-hr	1.82E-05	6.26E-06	1.01E-06	9.79E-07	1.12E-06	5.15E-07	6.64E-07
24-hr	7.58E-06	2.61E-06	4.22E-07	4.08E-07	4.67E-07	2.15E-07	2.77E-07
8,760-hour	3.89E-06	1.16E-06	2.17E-07	2.10E-07	2.38E-07	1.12E-07	1.45E-07

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants
Construction area 274 m x 354 m

Table RAI 8-a-5 Calculate Fugitive Dust Emission by Month

Month	TSP (ton/acre)	Hours	TSP (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)
Month 01	1.2	208	14.4	2.16	1.08
Month 02	1.2	208	14.4	2.16	1.08
Month 03	1.2	208	14.4	2.16	1.08
Month 04	1.2	208	14.4	2.16	1.08
Month 05	0.3	208	3.6	0.54	0.27
Month 06	0.3	208	3.6	0.54	0.27
Month 07	0.3	208	3.6	0.54	0.27
Month 08	0.3	208	3.6	0.54	0.27

Month	TSP (ton/acre)	Hours	TSP (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)
Month 09	0.3	208	3.6	0.54	0.27
Month 10	0.3	208	3.6	0.54	0.27
Month 11	0.3	208	3.6	0.54	0.27
Month 12	0.3	208	3.6	0.54	0.27

Assumptions

1. size of the construction site - 40 acre
2. fraction of the site with active construction at any given time - 0.6
3. effective area of the construction site - 24 acre
4. construction dimension - 274 m x 354 m
5. fraction of TSP that is PM_{10} - 0.15 ton PM10/ton TSP
6. fraction of TSP that is $PM_{2.5}$ - 0.075 ton PM10/ton TSP
7. TSP suppression due to application of water on unpaved surfaces - 50 %

Table RAI 8-a-6 Calculate average fugitive emission rates (PM_{10} and $PM_{2.5}$)

Time Rate	Area Emission Rate	
	PM_{10}	$PM_{2.5}$
	$g/s/m^2$	
1-hr	2.70E-05	1.35E-05
3-hr	2.70E-05	1.35E-05
8-hr	2.70E-05	1.35E-05
24-hr	1.12E-05	5.62E-06
8,760-hour	3.84E-06	1.92E-06

PM_{10} Maximum Monthly Total (ton):	2.16	PM_{10} Annual Total (ton):	12.96
$PM_{2.5}$ Maximum Monthly Total (ton):	1.08	$PM_{2.5}$ Annual Total (ton):	6.48
PM_{10} Annual Total (lb):	25920	$PM_{2.5}$ Annual Total (lb):	12960
PM_{10} Maximum Monthly Total (g):	1.96E+06	PM_{10} Annual Total (g):	1.18E+07
$PM_{2.5}$ Maximum Monthly Total (g):	9.80E+05	$PM_{2.5}$ Annual Total (g):	5.88E+06
Maximum Hours per month (hrs):	208		

Table RAI 8-a-7 Calculate fugitive HAP emissions

778336 lb diesel burned - mass of diesel fuel consumed by construction equipment over the entire year
0.000028 lb HAP / lb Diesel emission factor for a diesel service station
Total HAP over one year = 22 lb

Table RAI 8-a-8 Summarize Criteria, HAP, and VOC Annual Emissions

Pollutant	Tailpipe (lb)	Fugitive (lb)	Annual (lb)
NO_2	26,245	0	26,245
CO	7,846	0	7,846
PM_{10}	1,463	25,920	27,383
$PM_{2.5}$	1,416	12,960	14,376
VOC	1,606	21.8	1,628
SO_2	759	0	759
HAPs	981	22	1,002

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

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Table RAI 8-a-9 Summarize Criteria Pollutant Area Emission Rates

Emission Factor	Average Area Emission Rate g/s/m2				
	NO_2	CO	PM_{10}	$PM_{2.5}$	SO_2
1-hr	1.82E-05	6.26E-06	2.80E-05	1.45E-05	5.15E-07
3-hr	1.82E-05	6.26E-06	2.80E-05	1.45E-05	5.15E-07
8-hr	1.82E-05	6.26E-06	2.80E-05	1.45E-05	5.15E-07
24-hr	7.58E-06	2.61E-06	1.17E-05	6.03E-06	2.15E-07
8,760-hr	3.89E-06	1.16E-06	4.06E-06	2.13E-06	1.12E-07

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

Table RAI 8-a-10 ONE HOUR POLLUTANT CONCENTRATIONS BASED ON ANNUAL AVERAGE EMISSIONS RATES

Distance	CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
	$g/s/m^2$ - 1.16E-06	$g/s/m^2$ - 3.89E-06	$g/s/m^2$ - 2.13E-06	$g/s/m^2$ - 4.06E-06	$g/s/m^2$ - 1.12E-07
10	6.88E-01	2.30E+00	1.26E+00	2.40E+00	6.66E-02
20	7.04E-01	2.36E+00	1.29E+00	2.46E+00	6.81E-02
30	7.15E-01	2.39E+00	1.31E+00	2.49E+00	6.91E-02
40	7.31E-01	2.44E+00	1.34E+00	2.55E+00	7.06E-02
50	7.46E-01	2.50E+00	1.37E+00	2.60E+00	7.21E-02
60	7.63E-01	2.55E+00	1.40E+00	2.66E+00	7.37E-02
70	7.77E-01	2.60E+00	1.42E+00	2.71E+00	7.52E-02
80	7.92E-01	2.65E+00	1.45E+00	2.76E+00	7.66E-02
90	8.06E-01	2.69E+00	1.48E+00	2.81E+00	7.79E-02
100	8.26E-01	2.76E+00	1.51E+00	2.88E+00	7.99E-02
200	9.63E-01	3.22E+00	1.76E+00	3.36E+00	9.31E-02
300	7.41E-01	2.48E+00	1.36E+00	2.58E+00	7.16E-02
400	5.33E-01	1.78E+00	9.76E-01	1.86E+00	5.15E-02
500	4.24E-01	1.42E+00	7.78E-01	1.48E+00	4.10E-02
600	3.56E-01	1.19E+00	6.52E-01	1.24E+00	3.44E-02
700	3.07E-01	1.03E+00	5.62E-01	1.07E+00	2.97E-02
800	2.70E-01	9.03E-01	4.95E-01	9.42E-01	2.61E-02
900	2.41E-01	8.07E-01	4.42E-01	8.42E-01	2.33E-02
1000	2.19E-01	7.32E-01	4.01E-01	7.63E-01	2.11E-02
1200	1.85E-01	6.20E-01	3.40E-01	6.47E-01	1.79E-02
1400	1.61E-01	5.39E-01	2.95E-01	5.62E-01	1.56E-02
1600	1.42E-01	4.74E-01	2.60E-01	4.95E-01	1.37E-02
1800	1.26E-01	4.21E-01	2.31E-01	4.39E-01	1.22E-02
2000	1.13E-01	3.78E-01	2.07E-01	3.94E-01	1.09E-02
MAXIMUM:	9.63E-01	3.22E+00	1.76E+00	3.36E+00	9.31E-02
PROPERTY BOUNDARY:	2.41E-01	8.07E-01	4.42E-01	8.42E-01	2.33E-02
ONE MILE:	1.42E-01	4.74E-01	2.60E-01	4.95E-01	1.37E-02

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

Table RAI 8-a-11 SUMMARIZE THE MAXIMUM RESULTS

Maximum Impact (µg/m3)

Average	CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
1-hr	5.18E+00	1.50E+01	1.20E+01	2.32E+01	4.27E-01
3-hr	5.18E+00	1.50E+01	1.20E+01	2.32E+01	4.27E-01
8-hr	5.18E+00	1.50E+01	1.20E+01	2.32E+01	4.27E-01
24-hr	2.16E+00	6.27E+00	4.99E+00	9.65E+00	1.78E-01
Annual	9.63E-01	3.22E+00	1.76E+00	3.36E+00	9.31E-02

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

Property Boundary Impact (µg/m3)

Average	CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
1-hr	1.30E+00	3.77E+00	3.00E+00	5.81E+00	1.07E-01
3-hr	1.30E+00	3.77E+00	3.00E+00	5.81E+00	1.07E-01
8-hr	1.30E+00	3.77E+00	3.00E+00	5.81E+00	1.07E-01
24-hr	5.41E-01	1.57E+00	1.25E+00	2.42E+00	4.46E-02
Annual	2.41E-01	8.07E-01	4.42E-01	8.42E-01	2.33E-02

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

One Mile Impact (µg/m3)

Average	CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
1-hr	7.63E-01	2.21E+00	1.76E+00	3.41E+00	6.28E-02
3-hr	7.63E-01	2.21E+00	1.76E+00	3.41E+00	6.28E-02
8-hr	7.63E-01	2.21E+00	1.76E+00	3.41E+00	6.28E-02
24-hr	3.18E-01	9.23E-01	7.34E-01	1.42E+00	2.62E-02
Annual	1.42E-01	4.74E-01	2.60E-01	4.95E-01	1.37E-02

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

Table RAI 8-a-12 COMPARE RESULTS WITH NAAQS

Pollutant	Average	NAAQS μ/m^3	Maximum Impact $\mu g/m^3$	Property Boundary $\mu g/m^3$	One Mile Impact $\mu g/m^3$
CO	1-hr	10,000	5.184	1.299	0.763
CO	8-hr	40,000	3.628	0.909	0.534
NO_2	1-hr	188	15.049	3.771	2.215
NO_2	Annual	100	0.258	0.065	0.038
$PM_{2.5}$	24-hr	35	1.996	0.500	0.294
$PM_{2.5}$	Annual	15	0.141	0.035	0.021
PM_{10}	24-hr	150	3.861	0.968	0.568
SO_2	1-hr	200	0.427	0.107	0.063
SO_2	3-hr	1300	0.384	0.096	0.057
SO_2	24-hr	365	0.071	0.018	0.010
SO_2	Annual	80	0.007	0.002	0.001

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

Assumptions:

1. Pollutant impacts are determined based on the peak emissions generated by site preparation.
2. The peak one-hour concentrations are as determined by SCREEN3.
3. To determine the peak 3-hour concentration, the peak one-hour concentration is scaled by 0.9 based on EPA guidance on EPA guidance.
4. To determine the peak 8-hour concentration, the peak one-hour concentration is scaled by 0.7 based on EPA guidance.
5. To determine the peak 24-hour concentration, the peak one-hour concentration is scaled by 0.4 based on EPA guidance and by 10/24 to account for limited work day.
6. To determine the peak annual concentration, the peak one-hour concentration is scaled by 0.07 based on EPA guidance, by 10/24 to account for limited work day, then adjusted to account for 4 months of peak emissions (site preparation), 7.5 months of reduced emissions (post site preparation), and two weeks of zero emissions.
7. Scale Factors to estimate impact concentrations other than one hour based on Average 1-hr as 1.00, 3-hr as 0.9, 8-hr as 0.7, 24-hr as 0.4, and annual as 0.08.
8. Based on Average 1-hr as 1.00, 3-hr as 0.9, 8-hr as 0.7, 24-hr as 0.4, and annual as 0.08.

B. Phase 2 Construction Emissions and Impacts

RAI 8-a-13 Average Horsepower Hours per Month

This table combines the results from the previous two steps to calculate the horsepower-hours for each item of equipment, by month

Equipment	Hp	Factor	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
			Hp-hours											
Tractor/backhoe	150	0.21	1575	1575	1575	0	0	0	0	0	0	0	0	0
Dump Truck	300	0.21	3150	3150	3150	0	0	0	0	0	0	0	0	0
Air Compressor	325	0.43	0	13975	13975	13975	13975	13975	13975	13975	13975	13975	13975	13975
Concrete Pump	125	0.43	0	5375	5375	5375	2687.5	2687.5	2687.5	2687.5	0	0	0	0
Crane	175	0.43	0	7525	7525	7525	3762.5	3762.5	3762.5	3762.5	0	0	0	0
Fuel Truck	250	0.59	2950	2950	2950	2950	2950	2950	2950	2950	2950	2950	2950	2950
Water Truck	250	0.59	2950	2950	2950	2950	2950	2950	2950	2950	2950	2950	2950	2950
Forklift	200	0.59	9440	11800	11800	11800	11800	11800	11800	11800	5900	5900	5900	5900
Flatbed, 2 ton	200	0.59	9440	11800	11800	11800	11800	11800	11800	11800	5900	5900	5900	5900
Generator	33	0.43	0	2270.4	2270.4	2270.4	2270.4	2270.4	2270.4	2270.4	2270.4	2270.4	2270.4	2270.4
Welder	50	0.21	0	0	1050	1050	1050	2100	2100	2100	2100	2100	2100	2100
Small Truck	150	0.21	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150	3150

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This table summarizes the results from the individual12-month tables calculating the pollutant tailpipe emissions as a product of the horsepower-hours and emission factor. This table also and calculates the maximum monthly tailpipe emissions and annual tailpipe emissions for each pollutant.

RAI 8-a-14 Summarize Tailpipe Emissions

Month	NO_2	CO	PM_{10}	$PM_{2.5}$	VOC	SO_2	Combustion HAPs	Diesel
MONTH 01	391	96	25	24	28	11.7	15.1	11984
MONTH 02	816	247	52	50	59	23.9	30.9	24506
MONTH 03	827	256	54	52	60	24.2	31.3	24934
MONTH 04	765	234	48	46	52	22.5	29.2	23200
MONTH 05	686	190	39	38	43	20.2	26.2	20833
MONTH 06	698	199	41	40	44	20.6	26.6	21262
MONTH 07	698	199	41	40	44	20.6	26.6	21262
MONTH 08	698	199	41	40	44	20.6	26.6	21262
MONTH 09	480	124	25	24	26	14.1	18.1	14564
MONTH 10	480	124	25	24	26	14.1	18.1	14564
MONTH 11	480	124	25	24	26	14.1	18.1	14564
MONTH 12	480	124	25	24	26	14.1	18.1	14564

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

RAI 8-a-15 Calculate Average Tailpipe Emission Rates

Average Area Emission Rate	NO_2	CO	PM_{10}	$PM_{2.5}$	VOC	SO_2	Combustion HAPs
	$g/s/m^2$						
1-hr	2.68E-04	8.30E-05	1.74E-05	1.68E-05	1.95E-05	7.85E-06	1.02E-05
3-hr	2.68E-04	8.30E-05	1.74E-05	1.68E-05	1.95E-05	7.85E-06	1.02E-05
8-hr	2.68E-04	8.30E-05	1.74E-05	1.68E-05	1.95E-05	7.85E-06	1.02E-05
24-hr	1.12E-04	3.46E-05	7.24E-06	7.00E-06	8.12E-06	3.27E-06	4.23E-06
8760-hour	4.44E-05	1.25E-05	2.60E-06	2.52E-06	2.82E-06	1.31E-06	1.69E-06

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

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RAI 8-a-16 Calculate Fugitive Dust Emission by Month

Month	TSP (ton/acre)	Hours	TSP (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)
Month 01	0.3	208	0.09	0.0135	0.00675
Month 02	0.3	208	0.09	0.0135	0.00675
Month 03	0.3	208	0.09	0.0135	0.00675
Month 04	0.3	208	0.09	0.0135	0.00675
Month 05	0.3	208	0.09	0.0135	0.00675
Month 06	0.3	208	0.09	0.0135	0.00675
Month 07	0.3	208	0.09	0.0135	0.00675
Month 08	0.3	208	0.09	0.0135	0.00675
Month 09	0.3	208	0.09	0.0135	0.00675
Month 10	0.3	208	0.09	0.0135	0.00675
Month 11	0.3	208	0.09	0.0135	0.00675
Month 12	0.3	208	0.09	0.0135	0.00675

Assumptions

1. size of the construction site - 1 acre
2. fraction of the site with active construction at any given time - 0.6
3. active area of the construction site - 0.6 acre
4. active construction dimension – 49.3 m x 49.3 m
5. fraction of TSP that is PM10 - 0.15 ton PM10/ton TSP
6. fraction of TSP that is PM2.5 - 0.075 ton PM10/ton TSP
7. TSP suppression due to application of water on unpaved surfaces - 50 %

RAI 8-a-17 Calculate average fugitive emission rates (PM10 and PM2.5)

Time Rate	Area Emission Rate	
	PM_{10}	$PM_{2.5}$
	$g/s/m^2$	
1-hr	6.73E-06	3.36E-06
3-hr	6.73E-06	3.36E-06
8-hr	6.73E-06	3.36E-06
24-hr	2.80E-06	1.40E-06
8,760-hour	1.92E-06	9.59E-07

PM_{10} Maximum Monthly Total (ton):	0.0135	PM_{10} Annual Total (ton):	0.162
$PM_{2.5}$ Maximum Monthly Total (ton):	0.00675	$PM_{2.5}$ Annual Total (ton):	0.081
PM_{10} Annual Total (lb):	324	$PM_{2.5}$ Annual Total (lb):	162
PM_{10} Maximum Monthly Total (g):	1.22E+04	PM_{10} Annual Total (g):	1.47E+05
$PM_{2.5}$ Maximum Monthly Total (g):	6.12E+03	$PM_{2.5}$ Annual Total (g):	7.35E+04
Maximum Hours per month (hrs):	208		

RAI 8-a-18 Calculate fugitive HAP emissions

227499 lb diesel burned - mass of diesel fuel consumed by construction equipment over the entire year.
0.000028 lb HAP / lb Diesel emission factor for a diesel service station.
Total HAP over one year = 6 lb.

Assumptions

1. Assumed equipment types are listed in Table RAI 8-a-13.
2. Construction equipment is operated 10 hours per day, 5 days per week, 50 weeks per year.
3. All construction equipment is fueled with diesel.
4. On average, construction equipment consumes diesel fuel at a rate of 0.054 gal/hp-hr (ATTRA, 2007).
5. Annual storage tank evaporation losses are five percent of tank capacity (ATTRA, 2007).
6. The temporary onsite fuel storage tank is equipped with enhanced vapor recovery equipment to minimize fugitive VOC emissions.

RAI 8-a-19 Summarize Criteria, HAP, and VOC Annual Emissions

Pollutant	Tailpipe (lb)	Fugitive (lb)	Annual (lb)
NO_2	7,497	0	7,497
CO	2,115	0	2,115
PM_{10}	439	324	763
$PM_{2.5}$	425	162	587
VOC	477	6.4	484
SO_2	221	0	221
Combustion HAPs	285	6	291

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

RAI 8-a-20 Summarize Criteria Pollutant Area Emission Rates

Emission Factor	Average Area Emission Rate $g/s/m^2$				
	NO_2	CO	PM_{10}	$PM_{2.5}$	SO_2
1-hr	2.68E-04	8.30E-05	2.41E-05	2.02E-05	7.85E-06
3-hr	2.68E-04	8.30E-05	2.41E-05	2.02E-05	7.85E-06
8-hr	2.68E-04	8.30E-05	2.41E-05	2.02E-05	7.85E-06
24-hr	1.12E-04	3.46E-05	1.00E-05	8.41E-06	3.27E-06
8,760-hr	4.44E-05	1.25E-05	4.52E-06	3.48E-06	1.31E-06

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

RAI 8-a-21 SUMMARIZE THE MAXIMUM RESULTS

Maximum Impact (µg/m3)

Average	CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
1-hr	2.10E+01	6.79E+01	5.12E+00	6.11E+00	1.99E+00
3-hr	2.10E+01	6.79E+01	5.12E+00	6.11E+00	1.99E+00
8-hr	2.10E+01	6.79E+01	5.12E+00	6.11E+00	1.99E+00
24-hr	8.77E+00	2.83E+01	2.13E+00	2.55E+00	8.30E-01
Annual	3.17E+00	1.12E+01	8.81E-01	1.15E+00	3.31E-01

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

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Property Boundary Impact (µg/m3)

Average	CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
1-hr	9.41E-01	3.04E+00	2.29E-01	2.73E-01	8.90E-02
3-hr	9.41E-01	3.04E+00	2.29E-01	2.73E-01	8.90E-02
8-hr	9.41E-01	3.04E+00	2.29E-01	2.73E-01	8.90E-02
24-hr	3.92E-01	1.27E+00	9.53E-02	1.14E-01	3.71E-02
Annual	1.42E-01	5.03E-01	3.94E-02	5.12E-02	1.48E-02

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

One Mile Impact (µg/m3)

Average	CO	NO_2	$PM_{2.5}$	PM_{10}	SO_2
1-hr	3.99E-01	1.29E+00	9.69E-02	1.16E-01	3.77E-02
3-hr	3.99E-01	1.29E+00	9.69E-02	1.16E-01	3.77E-02
8-hr	3.99E-01	1.29E+00	9.69E-02	1.16E-01	3.77E-02
24-hr	1.66E-01	5.36E-01	4.04E-02	4.82E-02	1.57E-02
Annual	6.01E-02	2.13E-01	1.67E-02	2.17E-02	6.28E-03

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

RAI 8-a-22 COMPARE RESULTS WITH NAAQS

Pollutant	Average	NAAQS µ/m3	Maximum Impact µg/m3	Property Boundary µg/m3	One Mile Impact µg/m3
CO	1-hr	10,000	2.10E+1	9.41E-1	3.99E-1
CO	8-hr	40,000	1.47E+1	6.59E-1	2.79E-1
NO_2	1-hr	188	6.79E+1	3.04E+0	1.29E+0
NO_2	Annual	100	9.00E-1	4.02E-2	1.70E-2
$PM_{2.5}$	24-hr	35	8.53E-1	3.81E-2	1.62E-2
$PM_{2.5}$	Annual	15	7.05E-2	3.15E-3	1.34E-3
PM_{10}	24-hr	150	1.02E+0	4.56E-2	1.93E-2
SO_2	1-hr	200	1.99E+0	8.90E-2	3.77E-2
SO_2	3-hr	1300	1.79E+0	8.01E-2	3.39E-2
SO_2	24-hr	365	3.32E-1	1.48E-2	6.29E-3
SO_2	Annual	80	2.65E-2	1.19E-3	5.02E-4

NO_2 – Nitrogen Dioxide, VOC – Volatile Organic Chemicals, SO_2 – Sulfur Dioxide, PM_{10} Particulate Matter less than 10 microns, $PM_{2.5}$ Particulate Matter less than 2.5 microns, HAP – Hazardous Air Pollutants

Pollutant impacts are determined based on the peak emissions generated by site preparation. The peak one-hour concentrations are as determined by SCREEN3.

To determine the peak 3-hour concentration, the peak one-hour concentration is scaled by 0.9 based on EPA guidance on EPA guidance.

To determine the peak 8-hour concentration, the peak one-hour concentration is scaled by 0.7 based on EPA guidance.

To determine the peak 24-hour concentration, the peak one-hour concentration is scaled by 0.4 based on EPA guidance and by 10/24 to account for limited work day.

To determine the peak annual concentration, the peak one-hour concentration is scaled by 0.07 based on EPA guidance, by 10/24 to account for limited work day, then adjusted to account for 4 months of peak emissions (site preparation), 7.5 months of reduced emissions (post site preparation), and two weeks of zero emissions.

Scale Factors to estimate impact concentrations other than one hour based on Average 1-hr as 1.00, 3-hr as 0.9, 8-hr as 0.7, 24-hr as 0.4, and annual as 0.08.

Environmental Report Documentation Impact: Section 4.6.1.1, "Air Quality Impacts from Construction," has been revised based on the calculations from the EPA-420-R-10-018 (EPA 2010) reference. Section 4.6.2, "Incremental Impacts from the Phase 2 Facility," has been added to Section 4.6.

Section 4.6.3, "Combined Impacts for the Phase 2 Facility" was also added to Section 4.6. See the following sections and tables from the rewrite of Chapter 4:

- 4.6.1 Phase 1 Facility
- 4.6.1.1 Air Quality Impacts from Construction
- Table 4- 13 NAAQS Emission Rates during Phase 1 Construction
- Table 4- 14 Predicted Property-Boundary Air Concentrations From Phase 1 Construction and Applicable National Ambient Air Quality Standards
- 4.6.2 Incremental Impacts from the Phase 2 Facility
- 4.6.2.1 Construction
- Table 4- 21 Comparison of NAAQS Air Emissions for Phase 2 Construction Less Phase 1 Air Emissions
- 4.6.3 Combined Impacts for the Phase 2 Facility
- 4.6.3.1 Construction
- Table 4- 23 NAAQS Annual Air Emissions during Phase 2 Construction
- Table 4- 24 Predicted Property-Boundary Air Concentrations For Phase 2 Construction and Applicable National Ambient Air Quality Standards

Official Responses to Environmental Report RAIs

RAI 8

Provide additional information regarding air emissions during construction of the IIFP facility.

b. Describe how the on-site fueling of gasoline and diesel vehicles will take place.

The requested air emissions and refueling information is needed to properly assess the impacts to air quality during construction.

RESPONSE:

Diesel fuel will be stored on site during construction and will be hand pumped into construction vehicles and other facility vehicles involved in construction. The fuel tanks will be stored on a containment-type pad, and trucks will be driven onto the containment-type pad to start the dispensing process. The pad will be sloped and curbed for containment. The above ground fuel storage and dispensing apparatus is self-contained and includes a support frame on which a fuel storage tank is mounted and surrounded by a fuel containment vessel. The ER will be revised to address on-site fueling of IIFP vehicles.

Environmental Report Documentation Impact: The 6th paragraph of Section 4.6.1, "Air Quality Impacts from Construction," will be revised to address on-site fueling of diesel vehicles. See the following section below as it appears in the rewrite to Chapter 4:

Diesel fuel will be stored on site during construction and will be hand pumped into construction vehicles and other plant vehicles involved in construction. The fuel tanks will be stored on a containment pad, and trucks will be driven onto the containment pad to start the dispensing process. The pad will be sloped and curbed. The above ground fuel storage and dispensing apparatus is self-contained and includes a support frame on which a fuel storage tank is mounted and surrounded by a fuel containment vessel.

Official Responses to Environmental Report RAIs

RAI 8

Provide additional information regarding air emissions during construction of the IIFP facility.

c. Provide air impact analysis for the fuel storage and dispensing activities.

The requested air emissions and refueling information is needed to properly assess the impacts to air quality during construction.

RESPONSE: Air impact analysis has been performed for the fuel storage and dispensing activities for Phase 1 and Phase 2 construction. Those analyses have been included in the enclosed rewrite of Chapter 4.

Environmental Report Documentation Impact: Section 4.6.1, has been renamed "Phase 1 Facility," has been revised and includes the air impact analysis for fuel storage and dispensing Phase 1 construction activities. Section 4.6.3, "Combined Impacts for the Phase 2 Facility" was also added and includes the Phase 2 construction air impact analysis for fuel storage and dispensing activities. See the following paragraphs below from the enclosed rewrite to Chapter 4:

Section 4.6.1 Phase 1 Facility

Section ~~4.6.1~~ 4.6.1.1 Air Quality Impacts from Construction (Last paragraph)

Pollutant emissions and diesel fuel consumption attributable to construction activities were estimated based on the anticipated types and sizes of construction equipment, monthly hours of operation, EPA AP-42 emission factors, and fugitive dust emission rates of 1.2 and 0.3 tons of total suspended particulate per acre of construction area per month for initial site preparation and post-site preparation activities, respectively. Annual totals for Phase 1 include combustion of 109,848 gallons of diesel fuel which would generate VOC and HAP emissions of 1,606 pounds and 981 pounds, respectively. VOC fugitive losses attributable to diesel fuel storage and transfer operations are estimated at 22 pounds, for an annual VOC emission total of 1,628 pounds. The annual VOC/HAP emissions for Lea County NM are on the order of 5.4 million pounds. VOC/HAP emissions attributable to IIFP Phase 1 construction activities represent a very small fraction of the present regional emissions. Therefore, the air quality impacts attributable to construction activities and operation of an on-site diesel fuel station would be SMALL.

Section 4.6.3.1 Construction (Last paragraph)

Pollutant emissions and diesel fuel consumption attributable to construction activities were estimated based on the anticipated types and sizes of construction equipment, monthly hours of operation, and EPA AP-42 emission factors. Annual totals for Phase 2 include combustion of combustion of 32,107 gallons of diesel fuel which would generate VOC and HAP emissions of 477 pounds and 285 pounds, respectively. VOC fugitive losses attributable to diesel fuel storage and transfer operations are estimated at 6 pounds, for an annual VOC emission total of 483 pounds. As seen in Section 4.5.2.1, VOC fugitive losses attributable to diesel fuel storage and transfer operations from Phase 1 construction are estimated at 22 pounds, for an annual VOC emission total of 1,628 pounds. The annual VOC/HAP emissions for Lea County NM are on the order of 5.4 million pounds. VOC/HAP emissions attributable to IIFP Phase 1 and Phase 2 construction activities represent a very small fraction of the present regional emissions.

Therefore, the air quality impacts attributable to construction activities and operation of an on-site diesel fuel station during Phase 1 and Phase 2 construction would be SMALL.

Official Responses to Environmental Report RAIs

RAI 9

Provide additional information regarding air emissions during the operation of the IIFP facility.

a. *Describe representative capacity (make and models if available) of the gas-fired boilers to be used at the facility and the source of the data used to estimate the boiler emissions.*

The requested information is needed to properly assess the impacts to air quality during operation. Section 4.6, "Air Quality Impacts," of the ER (IIFP, 2009a) contains much information on air dispersion coefficients and current annual emissions for the 50 mile radius. However, the ER does not include information on the plant boilers or diesel generators, or on the annual emissions expected from plant operations. In addition, the ER does not contain information on modeling input assumptions or stack parameter assumptions, and the meteorological data used for the ER (Midland-Odessa) or another NWS weather station have not been provided.

RESPONSE:

Boiler make and model has not been determined; however, emissions have been estimated using AP 42 Table 1.4-1 and Table 1.4-2. IIFP requires two 10,000 lb/hr boilers operating one at a time. The boiler was assumed to be 85% efficient. Assumptions will be presented in the ER Table 15.

Environmental Report Documentation Impact: Table 4-15 (old Table 4-13), "Applicable NAAQS Air Emissions during Phase 1 Operation of On-Site Boilers (Natural Gas)," has been revised with the appropriate assumptions in the enclosed rewrite of Chapter 4 as follows:

Table 4- 15 Applicable NAAQS Air Emissions during Phase 1 Operation of On-Site Boilers (Natural Gas)

Pollutant	Emission Factor (lb/scf)	Emissions (lb/year)	Emissions (ton/year)	Unit Emissions (g/s)
Carbon Monoxide (CO)	8.4E-05	2,065	1.03	0.0297
Nitrogen Dioxide (NO_x)	1E-05	246	0.12	0.0035
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)	8.0E-05	187	0.09	0.0027
Particulate Matter Less Than 10 Microns (PM_{10})	8.07.6E-056	187	0.09	0.0027
Sulfur Oxides (SO_x)	61E-067	15	0.01	0.0002
Volatile Organic Carbon (VOC)	5.5E-06			

PM_{10} – particulate matter less than 10 microns; SO_x – sulfur oxides; NO_x – nitrogen dioxide; VOC – Volatile Organic Carbon; CO – carbon monoxide

[a] Source AP 42 Table 1.4-1 and Table 1.4-2 Emission Factors For Criteria Pollutants and Greenhouse Gases From Natural Gas Combustion

[b] Assumptions: Emission Factors from EPA - AP- 42, 1.4 natural gas emissions-uncontrolled. One Boiler -10,000lb/hr @ 85% efficiency.

Official Responses to Environmental Report RAIs

RAI 9

Provide additional information regarding air emissions during the operation of the IIFP facility.

b. *Describe representative make and models of the diesel generators to be used at the facility, estimate the hours per year that the generators will be in use, and provide the source of the data used to estimate the generator emissions.*

The requested information is needed to properly assess the impacts to air quality during operation. Section 4.6, "Air Quality Impacts," of the ER (IIFP, 2009a) contains much information on air dispersion coefficients and current annual emissions for the 50 mile radius. However, the ER does not include information on the plant boilers or diesel generators, or on the annual emissions expected from plant operations. In addition, the ER does not contain information on modeling input assumptions or stack parameter assumptions, and the meteorological data used for the ER (Midland-Odessa) or another NWS weather station have not been provided.

RESPONSE:

The diesel generator make and model have not been determined; however, emissions have been estimated using AP42 Table 3.4-1 and Table 3.4-2. IIFP standby generator will have an expected output of 530 HP and a firewater diesel pump with an output of approximately 75 HP. Emission data have been extracted from AP42 Tables 3.4-1 and 3.4-2 and modified based on the horsepower size from web site www.airquality.utah.gov to more conservative emissions. Additionally, air emissions from the on-site hydrogen generator have been estimated from vendor data.

Environmental Report Documentation Impact: Chapter 4 of the ER was rewritten to address Phase 1, Phase 2, and the delta between the two phases. The various sections and tables listed below deal with the emissions from the generators and the assumptions for operations. See the following sections and tables from rewrite for Chapter 4(provided in a separate document as part of the official RAI ER response package):

- 4.6.1.2 Air Quality Impacts from Operations
- Table 4-16 Applicable NAAQS Air Emissions during Phase 1 Operation of On-Site Generators and Fire-Water Pump
- Table 4- 17 Applicable NAAQS Air Emissions during Phase 1 Operation of On-Site Hydrogen Generation at the Hydrogen Generator Stack
- Table 4- 18 Phase 1 Operations Applicable NAAQS Air Emissions
- 4.6.2.2 Operations
- Table 4- 22 Differential in NAAQS Air Emissions between Phase 1 and Phase 2 Operations
- 4.6.3.2 Operations
- Table 4-26 Applicable NAAQS Air Emissions during Phase 2 Operation of On-Site Hydrogen Generation at the Hydrogen Generator Stack
- Table 4- 27 Phase 2 Operations NAAQS Air Emissions

Official Responses to Environmental Report RAIs

RAI 9

Provide additional information regarding air emissions during the operation of the IIFP facility.

c. *Describe the methods/analyses used to estimate the annual emissions from the facility, by pollutant, including the model (name and source of the model) used for estimating annual gaseous effluent concentrations, and modeling inputs and assumptions.*

The requested information is needed to properly assess the impacts to air quality during operation. Section 4.6, "Air Quality Impacts," of the ER (IIFP, 2009a) contains much information on air dispersion coefficients and current annual emissions for the 50 mile radius. However, the ER does not include information on the plant boilers or diesel generators, or on the annual emissions expected from plant operations. In addition, the ER does not contain information on modeling input assumptions or stack parameter assumptions, and the meteorological data used for the ER (Midland-Odessa) or another NWS weather station have not been provided.

RESPONSE:

Process emissions from the IIFP Facility were estimated with the following assumptions:

a. Scrubbers assumptions:-primary, secondary and tertiary with efficiencies 80%, 95% and 99% respectively (Total units-2 primary, 2 secondary, 2 tertiary).
b. UF_4 and Oxide Dust Collector Systems assumptions: 1% of hopper solids feed to primary dust collectors. Each dust collector has 99.5+% efficiency (Total of 4 dust collectors for Phase 1and 6 for Phase 2).
c. UF_4 Vacuum Transfer Dust Collector System has primary plus secondary filter with 99.5+ % efficiency and 99% efficiency, respectively.
d. Calcium Fluoride Dust Collector System only has a primary filter and is 99.5+% efficient from the 1% solids input. Dust Collector operates 4 hours per day = lb/hr x 310 days/yr.
e. Lime Dust Collector 99.9% efficient, only used during unloading.
f. Lb/yr = lb/hr x 8,760 x 0.85 on stream factor.

In the rewrite to Chapter 4, Sections 4.6.1, 4.6.2, and 4.6.3 deal with the NAAQS air emissions from the boilers, generators, and fire water pump during Phase 1 and Phase 2 operations with the differential also shown in the rewrite. Section 4.6.4 deals with the process air emissions from Phase 1 and Phase 2 operations through the process scrubbers and dust collectors. Modeling was addressed in Section 4.6.4.2.

Environmental Report Documentation Impact: See the Chapter 4 rewrite (provided in a separate document as part of the official RAI ER response package) for following sections dealing with NAAQS air emissions from the operations of the boilers, generators, etc. and process emissions not captured by the process scrubbers and dust collectors. Modeling is addressed in Section 4.6.4.2.

- 4.6.1 Phase 1 Facility
- 4.6.2 Incremental Impacts from the Phase 2 Facility
- 4.6.3 Combined Impacts for the Phase 2 Facility
- Table 4- 29 Process Emissions from the Operation of the IIFP Facility
- 4.6.4 Description of Gaseous Effluents
- 4.6.4.2 Calculation of Dilution Factors and Pollutant Dispersion

- Table 4- 30 Dispersion Coefficient Formulas Recommended by Briggs
- Table 4- 31 Average Annual Dilution Factors by Sector and Distance for Lea County, NM (sec/m3)

Environmental Report Documentation Impact: Section 4.12, "Public and Occupational Health Impacts," has been updated in the rewrite to Chapter 4 (provided in a separate document as part of the official RAI ER response package) addressing the emission data. See the following sections and table below addressing the health impacts from the operational emissions data from Phase 1 and Phase 2 operations:

- 4.12.1 Non-radiological Impacts
- 4.12.1.1 Site Preparation and Construction
- 4.12.1.2 Routine Gaseous Effluent
- Table 4-37 Estimated Annual Non-Radiological Gaseous Effluent from Phase 1 Operations.
- Table 4- 38 Estimated and Bounding Radiological Releases from the Stacks during Phase 1 Operations
- Table 4- 39 Estimated Annual Non-Radiological Gaseous Effluent from Phase 2 Operations
- Table 4- 40 Estimated and Bounding Radiological Releases from the Stacks during Integrated Phase 2 Operations
- 4.12.1.3 Routine Liquid Effluent
- 4.12.2.2.2 Public and Occupational Exposure Impacts
- Table 4- 41 Annual and Committed Dose Equivalents for Exposures to the MEI from Gaseous Effluents from Phase 1 Operations
- Table 4- 142 Annual and Committed Dose Equivalents for Exposures to the Nearest Resident from Gaseous Effluents during Phase 1 Operations
- Table 4-43 Annual and Committed Dose Equivalents for Exposures to the MEI from Gaseous Effluents from the Integrated Phase 2 Operations
- Table 4- 44 Annual and Committed Dose Equivalents for Exposures to the Nearest Resident from Gaseous Effluents during Integrated Phase 2 Operations
- Table 4-45 Estimated Dose Rates for Site Boundary Locations, MEI, and Nearest Resident for Phase 1 or Phase 2
- Table 4- 46 Phase 1 Collective Dose Equivalents to All Ages Population (Person-Sv) (gas release pathways)
- Table 4- 47 Phase 1 Collective Dose Equivalents to All Ages Population (Person-rem) (gas release pathways)
- Table 4- 48 Phase 2, Collective Dose Equivalents to All Ages Population (Person-Sv) (gas release pathways)
- Table 4- 49 Phase 2, Collective Dose Equivalents to All Ages Population (Person-rem) (gas release pathways)

Official Responses to Environmental Report RAIs

RAI 9

Provide additional information regarding air emissions during the operation of the IIFP facility.

d. Provide the stack parameter assumptions such as stack height(s), stack diameter, gas exit velocity, and stack gas exit temperature.

The requested information is needed to properly assess the impacts to air quality during operation. Section 4.6, "Air Quality Impacts," of the ER (IIFP, 2009a) contains much information on air dispersion coefficients and current annual emissions for the 50 mile radius. However, the ER does not include information on the plant boilers or diesel generators, or on the annual emissions expected from plant operations. In addition, the ER does not contain information on modeling input assumptions or stack parameter assumptions, and the meteorological data used for the ER (Midland-Odessa) or another NWS weather station have not been provided.

RESPONSE:

Former Table 2-2, "IIFP Plant Major Vent Stacks," provided the stack height for five (5) vent stacks. The table will be revised to include the stack diameter, gas exit velocity, and the gas exit temperature for those stacks as well as 9 other stacks that have been added and renumbered as Table 2-3.

Environmental Report Documentation Impact: Former Table 2-2 showing five (5) stacks has been deleted and replaced with Table 2-3 showing fourteen (14) vent stacks with an additional column displaying the stack diameter, stack exit gas velocity, and gas exit temperature.

Table 2-~~2~~3 IIFP Major Process Vent Stacks

Stack Identification (Number) and Description	Approximate Location	Approximate Height[a] (ft)	Estimate Range of Vent Flow Rates[b] (ft^3/min)	Main Constituents in Flow Stream	Stack Diameter (in) Stack Velocity (ft/min) Temperature
(01) Plant KOH Scrubbing System Stack	Slightly East of the DUF_4 Process Building	90	20-100	$HF/SiF_4/BF_3$	4 229-1,149 Ambient
(02) DUF_4 Dust Collector System	Slightly East of DUF_4 Process Building	80	3,800-7,600	UF_4/HF	8 10,888-21,776 Ambient

Stack Identification (Number) and Description	Approximate Location	Approximate Height[a] (ft)	Estimate Range of Vent Flow Rates[b] (ft^3/min)	Main Constituents in Flow Stream	Stack Diameter (in) Stack Velocity (ft/min) Temperature
(03) FEP Dust Collector System	West Side of FEP Process Building	80	3,800-7,600	Uranium Oxide/ HF/BF_3	8 10,888-21,776 Ambient
(04) Utilities Boiler Stack	Roof of Utilities Building	40	250-500	Particulates/SO_2/ NO_x/VOC/ Methane/CO/TOC /CO_2	8 716-1,432 300 °F
(05) (Future Phase 2 Plant) Oxide Dust Collector System	Northeast Corner of Future Oxide Process Building	80	3,800-7,600	Uranium Oxide/HF	8 10,888-21,776 Ambient
(06) Laboratory Hood Stack	East of Laboratory	30	3,000-4,000	Various trace reagent chemicals	12 3,800-5,100 Ambient
(07) Calcium Fluoride Dust Collector	Southwest Corner of the EPP	35	3,000-5,000	Particulates as CaF_2	8 8,600-14,334 Ambient
(08) Decon Dust Collector Stack	East of Decon Building	80	3,000-5,000	Trace Uranium & Metal Grit or Sand	8 8,600-14,334 Ambient
(09) Lime Dust Collector Stack	Northwest Corner of EPP	35	1,500-3,000	Particulates as $Ca(OH)_2$	42 39-78 Ambient
(10) CaF_2 Combustion Dryer Stack	Roof of EPP Building	35	30-100	Particulates/SO_2/ NO_x/VOC/ Methane/CO/TOC /CO_2	8 86-300 500

Stack Identification (Number) and Description	Approximate Location	Approximate Height[a] (ft)	Estimate Range of Vent Flow Rates[b] (ft^3/min)	Main Constituents in Flow Stream	Stack Diameter (in) Stack Velocity (ft/min) Temperature
(11)Water Evaporator Stack	East of EPP Building	35	50-100	Steam/Particulates /SO_2/NO_x/VOC/Methane/CO/TOC/CO_2	8 143-300 212 °F
(12) H_2 Generation Stack	East side of Plant near sanitary waste treatment	35	214-283	O_2/N_2/H_2O/CO_2/CO	4 2,454-3,245 250
(13) DUF_4 Vacuum Transfer Dust Collector Stack	Roof of FEP Building	80	4,800-10,600	Particulates as UF4	8 13,753-30,372 Ambient
(14) B_2O_3 Silo Dust Collector Stack	Above B_2O_3 Silo Building	80	2,000-4,200	Particulates as B_2O_3	8 5,733-12,041 Ambient

[a]feet-multiply by 0.3048 to get meters
[b]cubic feet-multiply by 0.028317 to get cubic meters
HF – Hydrogen Fluoride SiF_4 – Silicon Tetrafluoride BF_3 – Boron Trifluoride UF_4 – Uranium Tetrafluoride
SO_2 – Sulfur Dioxide NO_x – Nitrogen Oxides VOC – Volatile Organic Chemicals CO – Carbon Monoxide
TOC – Total Organic Chemicals CO_2 – Carbon Dioxide CaF_2 – Calcium Fluoride $Ca(OH)_2$ – Calcium Hydroxide
N_2 – Nitrogen O_2 – Oxygen H_20 – Water B_2O_3 – Boron Trioxide

Official Responses to Environmental Report RAIs

RAI 9

Provide additional information regarding air emissions during the operation of the IIFP facility.

e. *Provide the five years (1987 to 1991) of hourly meteorological data from the Midland-Odessa, Texas, National Weather Service (NWS) station that were used in the ER.*

The requested information is needed to properly assess the impacts to air quality during operation. Section 4.6, "Air Quality Impacts," of the ER (IIFP, 2009a) contains much information on air dispersion coefficients and current annual emissions for the 50 mile radius. However, the ER does not include information on the plant boilers or diesel generators, or on the annual emissions expected from plant operations. In addition, the ER does not contain information on modeling input assumptions or stack parameter assumptions, and the meteorological data used for the ER (Midland-Odessa) or another NWS weather station have not been provided.

RESPONSE:

As shown in 3rd, 4th and 5th paragraphs from below ER Section 3.6.1.4, "Wind," and from the 1st paragraph of ER Section 3.6.1.5, "Atmospheric Stability," the data came from NUREG-1790, "Environmental Impact Statement for the Proposed National Enrichment Facility in Lea County, New Mexico." The rationale used by the NRC for using this data is also provided in the 4th paragraph of Section 3.6.1.4 of the IIFP Environmental Report. The 3rd, 4th and 5th paragraphs from ER Section 3.6.1.4 and from the 1st paragraph of ER Section 3.6.1.5 read as follows:

"In the Environmental Impact Study (EIS) conducted by the Nuclear Regulatory Commission (NRC) for the National Enrichment Facility at Eunice, New Mexico (NRC, 2005), NRC staff examined climatology data from four weather stations in the area. These locations include Eunice, New Mexico; Hobbs, New Mexico; Midland-Odessa, Texas; and Roswell, New Mexico. See Table 3-25, "Weather Stations Located near the IIFP Site," for the distances and directions of these stations from the IIFP Site and the length of the records for the reported data.

The data from the NRC study is presented in Figure 3-57, "Wind Roses for Midland-Odessa, Roswell, Hobbs, and Eunice for 1993." From this one-year comparison, the general wind patterns for Midland-Odessa, Hobbs, and Eunice were somewhat similar. Roswell data appeared to be different with a stronger northerly and westerly component. The EPA requires that meteorological data be at least 75-percent complete (with less than 25% missing data) to be reliably usable as inputs for dispersion models. Despite the fact that Hobbs is the closest station to the IIFP Site, the Hobbs data did not meet the 75-percent completeness criteria. However, Hobbs observations can be used for a general description of the meteorological conditions at the IIFP Site. Midland-Odessa and Hobbs had comparable climate data based on a comparative analysis of meteorological data at the four locations surrounding the IIFP Site. Since Midland-Odessa was a first-order weather station with data completeness exceeding EPA requirements, NRC used the data from the Midland-Odessa weather station for its dispersion modeling for the EIS for the NEF.

The hourly meteorological observations at Midland-Odessa were used to generate wind rose plots. Monthly wind speeds and prevailing wind directions at Midland-Odessa for the years 1987 to 1991 are presented in Figure 3-58. The annual mean wind speed was 11 mph and the prevailing wind direction was 180 degrees with respect to North. The maximum five second wind speed was 70 mph (NRC, 2005).

Five years of data (1987-1991) from Midland-Odessa weather station were used to generate joint frequency distributions of wind speed (Figure 3-59) as a function of Pasquill stability class (A-F). The stability class was determined using the solar radiation/cloud cover method. Figure 3-60, "Distribution of Stability Classes for Midland-Odessa, 1987-1991" presents frequency distributions of wind speed and direction as a function of Pasquill stability class (A-F). The most stable classes (E and F) occur 18.9% and 13% of the time, respectively. The least stable (Class A) occurs 0.4% of the time. Important conditions for atmospheric dispersion, stability class F, and low wind speeds 1 to 3 mph, occur 2.2% of the time. The highest occurrences of the Class F and low wind speeds 1 to 3 mph with respect to wind direction are 0.28% and 0.23% with south and south-southeast winds (NRC, 2005)."

The data that NRC used in that study was taken from the Environmental Report for the NEF December 2003 (LES, 2003). Tables 3.6-12 through 3.6-18 from the NEF Environmental Report below are the five-year data for the 1987-1991 for the Midland-Odessa station.

Table 3.6-12 Midland-Odessa Five Year (1987-1991) Annual Joint Frequency Distribution
For All Stability Classes Combined

Jan. 1, 1987-Dec. 31, 1991
Wind Speed m/s (mi/hr)
Calm = 2.53%

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Direction	0.5-1.3 (1-3)	1.8-3.1 (4-7)	3.6-5.4 (8-12)	5.8-8.1 (13-18)	8.5-10.7 (19-24)	≥11 (24.5)	Total
N	119	702	722	563	225	57	2388
NNE	71	291	509	556	207	58	1692
NE	64	285	645	776	272	61	2103
ENE	51	382	738	726	170	27	2094
E	69	623	1176	713	95	15	2691
ESE	72	589	1061	557	75	12	2366
SE	70	931	1266	818	134	18	3237
SSE	127	1156	1555	1391	371	48	4648
S	168	1755	2763	3178	820	100	8784
SSW	100	813	1276	807	133	7	3136
SW	61	446	943	757	115	23	2345
WSW	68	356	667	637	191	78	1997
W	84	331	577	517	207	171	1887
WNW	77	244	281	269	75	51	997
NW	91	332	350	224	69	38	1104
NNW	79	500	365	228	80	20	1272
SubTotal	1371	9736	14894	12717	3239	784	42741

Table 3.6-13 Midland-Odessa Five Year (1987-1991) Annual Joint Frequency Distribution
Stability Class A

Jan. 1, 1987-Dec. 31, 1991
Wind Speed m/s (mi/hr)
Calm = 0.06%

Page 1 of 1

Direction	0.5-1.3 (1-3)	1.8-3.1 (4-7)	3.6-5.4 (8-12)	5.8-8.1 (13-18)	8.5-10.7 (19-24)	≥11 (24.5)	Total
N	3	16	0	0	0	0	19
NNE	3	7	0	0	0	0	10
NE	0	8	0	0	0	0	8
ENE	2	12	0	0	0	0	14
E	3	15	0	0	0	0	18
ESE	3	8	0	0	0	0	11
SE	2	10	0	0	0	0	12
SSE	0	10	0	0	0	0	10
S	3	16	0	0	0	0	19
SSW	2	9	0	0	0	0	11
SW	0	12	0	0	0	0	12
WSW	1	6	0	0	0	0	7
W	0	5	0	0	0	0	5
WNW	0	2	0	0	0	0	2
NW	1	7	0	0	0	0	8
NNW	0	5	0	0	0	0	5
SubTotal	23	148	0	0	0	0	171

Table 3.6-14 Midland-Odessa Five Year (1987-1991) Annual Joint Frequency Distribution
Stability Class B

Jan. 1, 1987-Dec. 31, 1991
Wind Speed m/s (mi/hr)
Calm = 0.11%

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Direction	0.5-1.3 (1-3)	1.8-3.1 (4-7)	3.6-5.4 (8-12)	5.8-8.1 (13-18)	8.5-10.7 (19-24)	≥11 (24.5)	Total
N	20	43	22	0	0	0	85
NNE	17	25	19	0	0	0	61
NE	16	32	22	0	0	0	70
ENE	14	46	36	0	0	0	96
E	6	69	62	0	0	0	137
ESE	17	50	44	0	0	0	111
SE	9	48	45	0	0	0	102
SSE	15	54	64	0	0	0	133
S	25	96	138	0	0	0	259
SSW	12	53	59	0	0	0	124
SW	14	42	49	0	0	0	105
WSW	12	43	43	0	0	0	98
W	16	51	17	0	0	0	84
WNW	11	25	13	0	0	0	49
NW	18	21	14	0	0	0	53
NNW	15	27	9	0	0	0	51
SubTotal	237	725	656	0	0	0	1618

Table 3.6-15 Midland-Odessa Five Year (1987-1991) Annual Joint Frequency Distribution
Stability Class C

Jan. 1, 1987-Dec. 31, 1991
Wind Speed m/s (mi/hr)
Calm = 0.12%

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Direction	0.5-1.3 (1-3)	1.8-3.1 (4-7)	3.6-5.4 (8-12)	5.8-8.1 (13-18)	8.5-10.7 (19-24)	≥11 (24.5)	Total
N	9	54	124	20	8	3	218
NNE	3	36	87	37	5	1	169
NE	5	37	95	48	11	3	197
ENE	0	52	93	43	4	1	193
E	2	54	164	50	7	0	277
ESE	4	41	147	60	7	0	259
SE	3	36	179	109	10	1	338
SSE	1	65	264	199	52	5	586
S	6	103	527	408	95	19	1158
SSW	5	82	266	124	13	1	491
SW	1	59	238	115	11	2	426
WSW	3	43	180	61	22	7	316
W	5	39	100	76	21	10	251
WNW	4	36	57	25	7	1	130
NW	7	21	51	21	4	0	104
NNW	4	32	48	8	8	3	103
SubTotal	62	790	2620	1402	285	57	5216

Table 3.6-16 Midland-Odessa Five Year (1987-1991) Annual Joint Frequency Distribution
Stability Class D

Jan. 1, 1987-Dec. 31, 1991
Wind Speed m/s (mi/hr)
Calm = 0.18%

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Direction	0.5-1.3 (1-3)	1.8-3.1 (4-7)	3.6-5.4 (8-12)	5.8-8.1 (13-18)	8.5-10.7 (19-24)	≥11 (24.5)	Total
N	8	112	308	543	217	54	1242
NNE	14	65	302	519	202	57	1159
NE	7	79	389	730	261	58	1524
ENE	6	104	426	683	166	26	1411
E	7	108	550	663	88	15	1431
ESE	13	95	458	497	68	12	1143
SE	5	92	514	709	124	17	1461
SSE	11	98	618	1192	319	43	2281
S	13	151	949	2770	725	81	4689
SSW	3	74	369	683	120	6	1255
SW	1	46	259	642	104	21	1073
WSW	2	42	182	576	169	71	1042
W	4	49	177	441	186	161	1018
WNW	5	29	81	244	68	50	477
NW	3	30	95	203	65	38	434
NNW	7	47	121	220	72	17	484
SubTotal	109	1221	5798	11315	2954	727	22124

Table 3.6-17 Midland-Odessa Five Year (1987-1991) Annual Joint Frequency Distribution
Stability Class E

Jan. 1, 1987-Dec. 31, 1991
Wind Speed m/s (mi/hr)
Calm = 0.00%

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Direction	0.5-1.3 (1-3)	1.8-3.1 (4-7)	3.6-5.4 (8-12)	5.8-8.1 (13-18)	8.5-10.7 (19-24)	≥11 (24.5)	Total
N	0	133	268	0	0	0	401
NNE	0	64	101	0	0	0	165
NE	0	66	139	0	0	0	205
ENE	0	81	183	0	0	0	264
E	0	143	400	0	0	0	543
ESE	0	131	412	0	0	0	543
SE	0	236	528	0	0	0	764
SSE	0	259	609	0	0	0	868
S	0	380	1149	0	0	0	1529
SSW	0	145	582	0	0	0	727
SW	0	65	397	0	0	0	462
WSW	0	60	262	0	0	0	322
W	0	42	283	0	0	0	325
WNW	0	36	130	0	0	0	166
NW	0	50	190	0	0	0	240
NNW	0	98	187	0	0	0	285
SubTotal	0	1989	5820	0	0	0	7809

Table 3.6-18 Midland-Odessa Five Year (1987-1991) Annual Joint Frequency Distribution
Stability Class F

Jan. 1, 1987-Dec. 31, 1991
Wind Speed m/s (mi/hr)
Calm = 2.07%

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Direction	0.5-1.3 (1-3)	1.8-3.1 (4-7)	3.6-5.4 (8-12)	5.8-8.1 (13-18)	8.5-10.7 (19-24)	≥11 (24.5)	Total
N	79	344	0	0	0	0	423
NNE	34	94	0	0	0	0	128
NE	36	63	0	0	0	0	99
ENE	29	87	0	0	0	0	116
E	51	234	0	0	0	0	285
ESE	35	264	0	0	0	0	299
SE	51	509	0	0	0	0	560
SSE	100	670	0	0	0	0	770
S	121	1009	0	0	0	0	1130
SSW	78	450	0	0	0	0	528
SW	45	222	0	0	0	0	267
WSW	50	162	0	0	0	0	212
W	59	145	0	0	0	0	204
WNW	57	116	0	0	0	0	173
NW	62	203	0	0	0	0	265
NNW	53	291	0	0	0	0	344
SubTotal	940	4863	0	0	0	0	5803

Environmental Report Documentation Impact: None

Official Responses to Environmental Report RAIs

RAI 10 - Provide additional information regarding accident analyses.

Describe how the release rates required to exceed consequence levels at the IIFP facility boundary are determined from the Goode (1995) paper referenced in Section 4.1.2, "Consequence Analysis" of the IIFP Integrated Safety Analysis (ISA) Summary, (IIFP, 2009b).

This information is needed to evaluate the IIFP analysis so that accidents can be presented in the NRC EIS. Neither the ER nor the ISA provide this information.

RESPONSE:

The Goode 1995 reference cited in the ISA Summary provides a descriptive overview of HGSYSTEM evaluations for HF releases at the Paducah and Portsmouth gaseous diffusion plants; however, the Goode 1995 reference does not directly produce the release rates cited in the ISA Summary for the IIFP project (4 lb/hr and 91 lb/hr release rates to produce consequence levels 2 and 3). Instead, the release rates cited in the ISA Summary are based on preliminary calculations that were developed as part of the conceptual design.

The conceptual design calculations applied HGSYSTEM to estimate the steady release HF release rate that would produce each of the eight conditions shown in the table below. For the purpose of evaluation, the distances to the site and property boundaries were assumed to be 200 meters and 900 meters, respectively. The AEGL2 and AEGL3 values were assumed at 0.82 mg/m^3 and 19.6 mg/m^3, respectively. Releases were evaluated for F1 and D2.5 atmospheric conditions. The bolded results in the "Required HF Release Rate" column are cited in the ISA Summary.

Index	Based on these Atmospheric Conditions	Produce this HF Concentration (mg/m^3)	At This Downwind Distance (m)	Required HF Release Rate (kg/sec)	Required HF Release Rate (lb/hr)
01	F1	AEGL2 = 0.82	200	2.85E-05	0.23
02	F1	AEGL3 = 19.6	200	7.28E-04	5.8
03	F1	AEGL2 = 0.82	900	3.50E-04	2.8
04	F1	AEGL3 = 19.6	900	9.05E-03	71.8
05	D2.5	AEGL2 = 0.82	200	5.05E-04	**4.01**
06	D2.5	AEGL3 = 19.6	200	1.15E-02	**91.3**
07	D2.5	AEGL2 = 0.82	900	9.67E-03	76.7
08	D2.5	AEGL3 = 19.6	900	2.06E-01	1635

The release rates determined by HGSYSTEM, as described in the IIFP ISA Summary, Section 4.1.2, were explicitly developed as part of the early Process Hazards Analysis (PHA) to identify whether prevention or mitigation measures may be needed. However, these release rates were not applied beyond the early PHA stage of the project. In support of the ISA, all site boundary consequence calculations for all postulated accidents are based on exclusively on the Gaussian Dispersion equation. None of the accident consequence calculations or conclusions is based on HGSYSTEM. Because the HGSYSTEM results were preliminary and do not support any of the results or conclusions of the ISA, the discussion about HGSYSTEM will be removed from the ISA Summary.

Environmental Report Documentation Impact: The 5th paragraph of Section 4.1.2, "Consequence Analysis," of the ISA Summary will be deleted as shown below:

~~The HGSYSTEMS dispersion model (Goode, 1995) was used to calculate release rates required to exceed criteria concentrations at the site boundary for hypothetical HF releases. It is estimated that release rates of ~4 lb/hr are required to exceed intermediate (Category 2) consequence levels and ~91 lb/hr to exceed high (Category 3) consequence levels at the site boundary. It is anticipated that immediate plant emergency response to such an incident would reduce the duration of the release and mitigate any off-site impact.~~

RAI 11

Provide additional information regarding groundwater.

a. *Provide information about the existing site groundwater monitoring well network and indicate whether a baseline ground water quality assessment will be established. Clarify what role if any the Cunningham Plant monitoring wells, mentioned in the ER, Section 3.1.2, "Description of Off-site Areas," will play in the groundwater assessment. Specify whether the following information is available for review onsite or can be submitted for reference:*

- *location of existing groundwater monitoring wells,*
- *New Mexico well registry numbers,*
- *well capacity (gpm),*
- *well depths,*
- *groundwater quality data, and*
- *any other relevant available information.*

This information is needed in order to analyze local and regional groundwater resources to provide sufficient detail for inclusion in the EIS.

RESPONSE:

Section 3.4.15.7," Historical and Current Data from Site Wells," will be revised to include the location of the existing Xcel Energy groundwater monitoring wells, well depths, and groundwater quality. Xcel Energy has analyzed groundwater for a limited number of constituents. IIFP is proposing four monitoring wells that will be sampled and analyzed for constituents that will be present at the IIFP facility. IIFP will also sample for analytes that exceed standards in Xcel Energy monitoring wells.

Environmental Report Documentation Impact: Section 3.4.15.7 will be revised to include requested information above. The text and Figure in Section 3.4.15.7 will be replaced with the following text, figure, and table. Section 3.4.15.7 will be revised as follows:

3.4.15.7 Historical and Current Data from Site Wells

~~Four irrigation (monitoring) wells are on the IIFP site. See Figure 3-30, "Water Wells Located on the Proposed IIFP Site" for locations of these irrigation monitoring wells. For the M3 monitoring well in the upper left quadrant, the depth to water (DTW) is 16.8 m (55 ft) and the total depth (TD) is 50 m (164 ft). The M4 well in the lower left quadrant has a DTW of 21.3 m (70 ft) and TD of 57.9 m (190 ft). The irrigation M2 well in the upper right quadrant possesses a DTW of 16.8 m (55 ft) and a TD of 60.4 m (198 ft). The other M5 well on the site in the lower right quadrant has a DTW of 21.3 m (70 ft) and a TD of 54 m (177 ft).~~

Four wells are located in Section 27 of the IIFP Site. See Figure 3-32 for the location of these wells within Section 27 of the IIFP Site. Initial depth to groundwater (DTGW) in M3 (supply well for Xcel Energy Maddox Station) was 16.8 m (55 ft) when completed in 1965. Three Xcel Energy Cunningham Station monitoring wells are located along a north-south axis close to the western boundary of Section 27 and have been monitoring for DTGW as recently as November 2009 (GLEI, 2010d). DTGW within these wells ranges from 18 m to 20.4 m (59 ft to 67 ft) below ground surface (bgs).

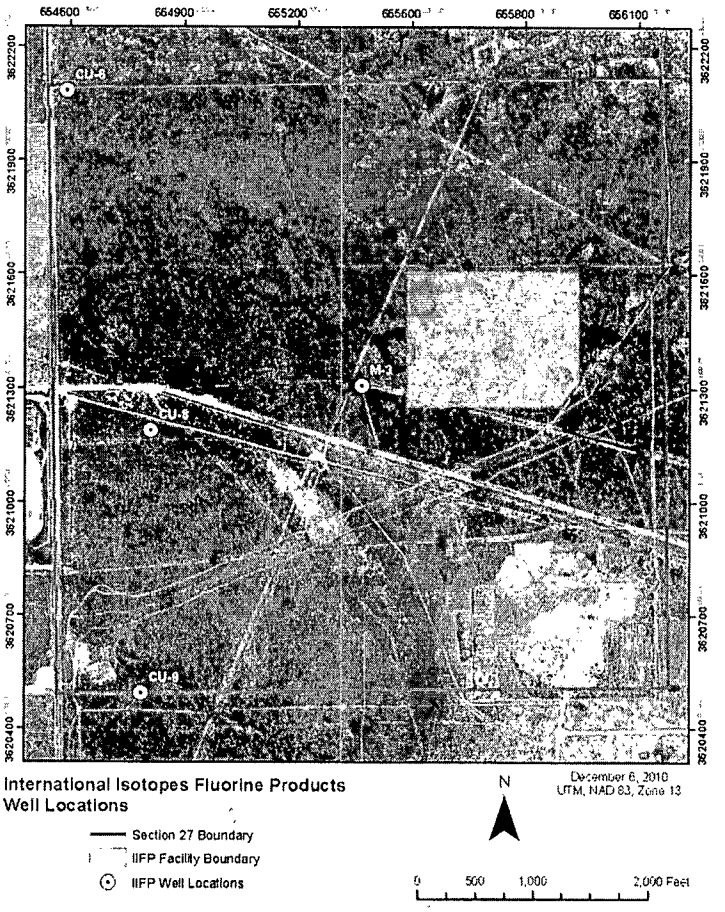

Figure 3- ~~30~~32 Water Wells Located ~~o~~in Section 27 of the ~~Proposed~~ IIFP Site

The Xcel Energy Cunningham Station is located just west of Section 27. The Cunningham Station operated with an unlined cooling tower and boiler cleanout pond for a number of years. The pond has recently been lined. Xcel Energy monitoring wells located along the western IIFP Section 27 boundary were installed to monitor contaminants in groundwater that potentially originated from cooling water pond and/or agricultural fields. Shown in Figure 3-32 are monitoring wells locations within Section 27 around the Xcel Energy Cunningham Station (CU6, CU7, and CU8) for which water quality data has been collected since 2004. Data from these monitoring well are shown in Table 3-10 (GLEI, 2010d). Results that exceeded New Mexico Water Quality Control Commission (WQCC) Standards for Groundwater are bolded text. CU8 consistently exceeded standards for sulfate and total dissolved solids. CU9 consistently exceeded standards for sulfate, chloride, and total dissolved solids. Groundwater quality data has not been obtained for the Xcel Energy Maddox Facility supply well (M3).

Four monitoring wells are proposed for the IIFP use. Three monitoring wells are proposed down gradient (south) from the DUF_6 Cylinder Storage Pad, the Cylinder Pad Stormwater Retention Basin, and the Stormwater Retention/Evaporation Basin. One monitoring well is proposed up gradient (north) from the

primary production facility just within the 1.2 ha (40-ac) security fence for the IIFP Facility. Refer to Figure 2-10, "IIFP Facility Site Plan."

An application for the Ground Wwater Discharge Permit has not been submitted to the Ground Wwater Quality Bureau (GWQB) of the New Mexico Environmental Department., ~~but t~~The GWQB ~~has tentatively agreed to give approval to the proposed monitoring well locations prior to issuing the Groundwater Discharge Permit~~ has issued a conceptual monitoring plan that is subject to change as more information becomes available during the discharge permit application process. The GWQB tentatively agrees with the number and location of down gradient wells, but anticipates up to four up gradient wells may be needed along the east and northeast side of the IIFP depending on the hydrologic information provided during the application process. NMED will require that total dissolved solids, sulfate, chloride, nitrate as nitrogen, total Kjeldahl nitrogen, fluoride, and isotopic uranium be analyzed for on a quarterly basis (NMED, 2011).

Table 3- 10 Site Water Quality As Depicted From Monitoring Wells from Xcel Energy Cunningham Station

	2004	2005				2006				2007				2008				2009				2010
	12/27	3/29	6/23	9/29	12/15	3/28	6/16	9/27	12/20	3/20	6/27	9/5	12/5/	2/28	5/15	8/14	12/4	3/10/	5/20/	8/27/	11/18	3/19
CU6 Monitoring Well																						
SO_4	66	66	63	61	64	64	61	59	61	65	62	65	74	81	58	70	72	64	69	66	66	65
Cl	26	25	24	22	26	28	26	24	27	32	29	32	33	37	26	31	32	30	32	33	35	NS
NO_3	10.2	10.2	10.2	11.1	10.2	10.2	10.2	10.2	10.2	13.3	10.0	10.0	10.0	11.1	10.2	10.2	10.0	10.0	10.0	9.0	9.0	NS
NO_3-N	2.3	2.3	2.3	2.5	2.3	2.3	2.3	2.3	2.3	3.0	2.3	2.3	2.3	2.5	2.3	2.3	2.3	2.3	2.3	2.0	2.0	2.3
pH	7.5	7	7.4	7.5	7.3	7.5	7.6	7.5	7.3	7.5	7.4	7.3	7.5	7.5	7.5	7.3	7.4	7.4	7.3	7.4	NS	NS
TDS	377	365	363	354	354	359	364	355	384	365	378	378	370	336	348	383	376	358	396	357	363	392
B	0.47	**0.85**	0.05	0.03	0.06	0.02	0.01	0.14	0.09	0.03	0.13	0.01	0.11	NS	0.05	0.04	0.04	NS	0.32	0.07	NS	NS
CU8 Monitoring Well																						
SO_4	**782**	**742**	**714**	**712**	**716**	**732**	**672**	**666**	**636**	**662**	**652**	**658**	**679**	**674**	**628**	**617**	**637**	**619**	**605**	590	593	588
Cl	136	135	132	136	130	133	129	130	118	130	126	128	129	134	121	122	135	126	124	123	126	NS
NO_3	15.1	18.2	18.2	20.8	18.2	19.9	19.9	19.9	19.0	19.9	18	19	19	19.0	16.8	19.0	21	19	19	19	19	NS
NO_3-N	3.4	4.1	4.1	4.7	4.1	4.5	4.5	4.5	4.3	4.5	4.1	4.3	4.3	4.3	3.8	4.3	4.7	4.3	4.3	4.3	4.3	4.5
pH	7.2	6.7	7.1	7.2	7.0	7.2	7.3	7.2	7.1	7.3	7.1	6.9	7.1	7.2	7.2	7.2	7.3	7.1	7.0	7.0	NS	NS
TDS	**1569**	**1551**	**1536**	**1505**	**1502**	**1510**	**1492**	**1456**	**1479**	**1449**	**1456**	**1405**	**1379**	**1382**	**1364**	**1387**	**1357**	**1345**	**1351**	**1282**	**1277**	**1285**
B	0.6	**1.0**	0.3	0.1	0.1	0.1	0.0	0.3	0.3	0.0	0.4	0.0	0.3	MS	1.1	0.1	0.1	NS	0.6	0.3	NS	NS
CU9 Monitoring Well																						
SO_4	**778**	**743**	**704**	**720**	**684**	**678**	**690**	**685**	**647**	**704**	**731**	**707**	**557**	**733**	**740**	**711**	**743**	**711**	**707**	**685**	**681**	**692**
Cl	**525**	**414**	**408**	**390**	**429**	**483**	**504**	**541**	**521**	**557**	**527**	**481**	**496**	**463**	**492**	**412**	**399**	**395**	**384**	**378**	**383**	NS
NO_3	12.1	14.2	14.2	15.4	15.1	12.0	18.2	19.0	15.1	19.0	15	13	15	8.0	26.1	18.2	20	17	16	19	18	NS
NO_3-N	2.7	3.2	3.2	3.6	3.4	2.7	4.1	4.3	3.4	4.3	3.4	2.9	3.4	1.8	5.9	4.1	4.5	3.8	3.6	4.3	4.1	4.3
pH	7.3	6.7	7.4	7.2	7.3	7.2	7.2	7.2	7.2	7.3	7.3	7.1	7.3	7.3	7.3	7.3	7.3	7.3	7.1	7.3	NS	NS
TDS	**2202**	**2202**	**1969**	**1924**	**1964**	**2058**	**2105**	**2147**	**2175**	**2169**	**2206**	**2101**	**2086**	**2057**	**2012**	**1994**	**1951**	**1893**	**1870**	**1837**	**1838**	**1835**
B	0.6	1.1	0.4	0.1	0.2	0.1	0.0	0.1	0.3	0.1	0.4	0.0	0.3	NS	0.1	0.1	0.1	NS	0.7	0.3	NS	NS

Source: GLEL 2010d. Results that exceeded New Mexico WQCC Standards for Groundwater are **bolded.**

SO_4 – Sulfate Cl – Chloride NO_3 – Nitrate NO_3-N – Nitrate as Nitrogen pH – Hydrogen Ion Concentration TDS – Total Dissolved Solids B -Boron

Official Responses to Environmental Report RAIs

RAI 11

Provide additional information regarding groundwater.

b. *Describe the proposed site groundwater monitoring well network to include information on well locations, total depths, and well capacity (gpm).*

This information is needed in order to analyze local and regional groundwater resources to provide sufficient detail for inclusion in the EIS.

RESPONSE:

Four monitoring wells are proposed for the IIFP use. Three monitoring wells are proposed down gradient (south) from the DUF_6 Cylinder Storage Pad, the Cylinder Pad Stormwater Retention Basin, and the Stormwater Detention/Evaporation Basin. One monitoring well is proposed up gradient (north) from the primary production facility just within the 40-acre security fence for the IIFP Facility. Refer to Figure RAI 11-b 1, "IIFP Groundwater Monitoring Well Locations." An application for the Ground Water Discharge Permit has not been submitted to the Ground Water Quality Bureau (GWQB) of the New Mexico Environmental Department. The GWQB has issued a conceptual monitoring plan that is subject to change as more information becomes available the discharge permit application process. The GWQB tentatively agrees with the number and location of down gradient wells, but anticipates up to four up gradient wells may be needed along the east and northeast side of the IIFP Facility depending on the hydrologic information provided during the application process. NMED will require that total dissolved solids, sulfate, chloride, nitrate as nitrogen, total Kjeldahl nitrogen, fluoride, and isotopic uranium be analyzed on a quarterly basis (NMED, 2011).

Security Related Information – Withhold from Public Disclosure in accordance with 19 CFR §2.390

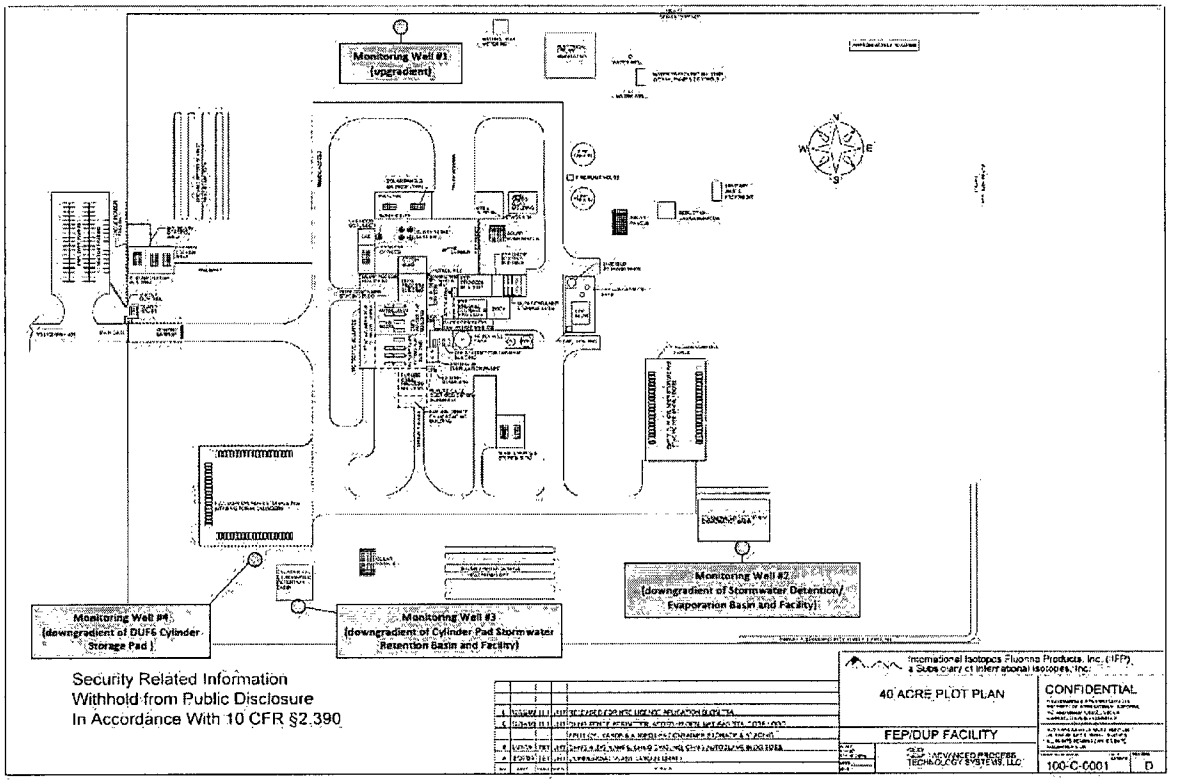

Figure RRA 11-b-1 IIFP Groundwater Monitoring Well Locations

Environmental Report Documentation Impact: Section 3.4.15.7 will be revised to include requested information above. See the Environmental Report Documentation Impact for RAI 11-a. The communications to the GWQB, "Groundwater Discharge Permit Monitoring Requirements," and the GWQB communications, "Preliminary Description of Monitoring Requirements for the Proposed International Isotopes Uranium De-Conversion Facility near Hobbs, New Mexico," will be included in Appendix B of the Environmental Report as below:

International Isotopes Inc.

January 27, 2011

Mr. Clint Marshall, Hydrologist
New Mexico Environment Department
Groundwater Quality Bureau
1190 St. Francis Dr.
Santa Fe, NM 87502

Re: Groundwater Discharge Permit Monitoring Requirements

Dear Mr. Marshall:

International Isotopes Fluorine Products, Inc. (IIFP) plans to construct and operate a facility on 40 acres of land located approximately 10 miles west of Hobbs, New Mexico. The proposed facility will be located in Section 27, Range 18 South, and Township 36 East. The facility will utilize depleted uranium hexafluoride to produce high purity inorganic fluorides, anhydrous hydrofluoric acid and uranium oxides. The fluoride gas products and anhydrous hydrogen fluoride will be sold for various industrial applications. International Isotopes Fluorine Products, Inc. (IIFP) requests a letter from the New Mexico Environment Department (NMED) Ground Water Quality Bureau outlining the potential monitoring, and reporting requirements required under a groundwater discharge permit for operation of their facility.

IIFP facility operations will not result in the discharge of process water into ponds. Facility designs do include multiple contained process and storage buildings, an outdoor depleted uranium hexafluoride cylinder storage area, a site stormwater retention/detention pond, sewage treatment facility, and treated sewage effluent land apply area.

The Xcel Energy Cunningham Station, a natural gas fired power plant, is located just west of Section 27. The Cunningham Station operated for a number of years with an unlined pond that received discharges from cooling towers and boiler cleanout operations. Xcel applied effluent from the pond to agricultural fields that are located north of the Cunningham station. The Cunningham Station and agricultural land apply area are approximately one half mile west and hydrologically up-gradient or cross-gradient of the proposed IIFP Facility.

Xcel energy has installed a number of monitoring wells to observe contaminant concentrations in the local aquifer that may have originated from Cunningham Facility operations. Three Xcel monitoring wells CU6, CU8 and CU9 are located on the western boundary of Section 27. NMED Groundwater Quality Bureau Discharge Permit 1429 files indicate groundwater monitoring was initiated in these wells in 2004 and has continued to present time. CU8 has consistently exceeded New Mexico Water Quality Control Commission (WQCC) standards for sulfate and total dissolved solids, and CU9 consistently exceeded standards for sulfate, chloride, and total

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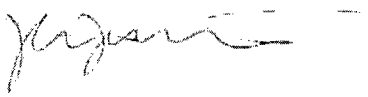
Website: www.intisoid.com

dissolved solids. A Voluntary Remediation Program Application was submitted in November 30, 2011 by Lea County New Mexico requesting a Certification of Completion and a Covenant Not to Sue from the Groundwater Quality Bureau for the existing ground water contamination.

It is our understanding that the Groundwater Bureau will review proposed facility designs to ensure that they will be constructed in a fashion that will minimize the potential for discharge of pollutants to groundwater. The Groundwater Bureau will also require a monitoring and reporting program designed to monitor groundwater quality up-gradient of the proposed facility and detect releases from facility structures with the potential to discharge pollutants into the groundwater. Given this brief overview of the IIFP structures and pre-existing conditions, IIFP requests that the NMED Groundwater Quality Bureau provide an outline for facility monitoring and reporting requirements.

Please contact me by phone at (208) 524-5300 or by email at jjmiller@intisoid.com if you have questions regarding these documents.

Sincerely,



John J. Miller, CHP
Radiation Safety Officer

JJM-2011-09

SUSANA MARTINEZ
Governor

JOHN SANCHEZ
Lieutenant Governor

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

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1190 St. Francis Drive
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DAVE MARTIN
Secretary

RAJ SOLOMAN, P.E.
Deputy Secretary

February 11, 2011

Mr. John Miller, CHP
Radiation Safety Officer
International Isotopes, Inc.
4137 Commerce Circle
Idaho Falls, Idaho 83401

RE: Preliminary Description of Monitoring Requirements for the Proposed International Isotopes Uranium De-Conversion Facility near Hobbs, New Mexico

Dear Mr. Miller:

The Ground Water Quality Bureau of the New Mexico Environment Department (NMED) has received your letter requesting an outline for ground water monitoring and reporting requirements for the proposed uranium de-conversion facility. The facility will be constructed by International Isotopes Fluorine Products, Inc. (IIFP) 10 miles west of Hobbs, NM in Section 27, T18S, R36E.

IIFP presented general information about the facility to NMED at a meeting on September 8, 2010. Among several topics discussed at the meeting, IIFP presented a general site plan showing the layout of the facility components. In addition, the parties discussed the general hydrology of the area and ground water impacts at nearby facilities. IIFP has yet to formally submit a discharge permit application, therefore NMED is responding to your request based on the general information that has been received to date. The conceptual monitoring plan described below is preliminary and subject to change as more information becomes available through the forthcoming discharge permit application process.

Preliminary Monitoring Requirements

Ground water monitoring wells will be required, at a minimum, downgradient of the following facility components: 1) Cylinder Pad Stormwater Retention Basin, 2) Storm Water Retention / Evaporation Basin, and 3) Sanitary Waste Treatment Plant. Upgradient monitoring wells will be required along the west and northwest perimeter of the IIFP. NMED anticipates up to four upgradient wells may be needed depending on the hydrologic information provided during the application process.

Regional ground water flow in this area is generally to the east–southeast. However, several high-capacity (250-500 gal/min) supply wells for the Cunningham and Maddox power stations are located in the vicinity of the proposed IIFP site. In addition, based on the information provided, new supply wells for the IIFP will be installed onsite. Periodic operation of these wells may locally affect the regional ground water flow direction near the site. Based on the hydrologic information provided after installation of the initial wells, additional monitoring wells may be required.

NMED will require, at a minimum, that the following analytical parameters be measured quarterly in all monitoring well samples: 1) total dissolved solids, 2) sulfate, 3) chloride, 4) nitrate as nitrogen, 5) total kjeldahl nitrogen, 6) fluoride and 7) isotopic uranium (^{234}U, ^{235}U, ^{238}U).

NMED will require ground water quality to be reported quarterly.

As stated previously, the conceptual monitoring plan described above is subject to change based on future information that is provided by IIFP during the discharge permit application process, as well as any other information that may become available to NMED prior to issuing the discharge permit. If you have any questions, please contact me at 505-827-0027 or clint.marshall@state.nm.us.

Sincerely,

Clint Marshall, Hydrogeologist
Mining Environmental Compliance Section
Ground Water Quality Bureau

xc: Mary Ann Menetrey, Program Manager, MECS

Official Responses to Environmental Report RAIs

RAI 11

Provide additional information regarding groundwater.

c. *Describe the proposed site groundwater production wells to include well locations, total depths, and peak and average pumping rates (gpm), and annual maximum groundwater use; and*

This information is needed in order to analyze local and regional groundwater resources to provide sufficient detail for inclusion in the EIS.

RESPONSE:

Present production wells for Xcel Energy within the 640-ac (259 ha) site are shown in Figure 4-4, "Water Wells Located on the IIFP Site." The depth to water in the four wells ranges from 17 m (55 ft) to 21 m (70 ft), with the total depth ranging from 50 m (164 ft) to 60 m (198 ft).

In addition, ER Sections 3.4.6 and ER Sections 4.4 through 4.4.11 (in the Chapter 4 re-write) have been revised to clarify water use quantities in Phase 1 construction and operation, Phase 2 construction and in the integrated IIFP operations after Phase 2 construction has been completed.

Lea County intends to drill a production well during the 2nd quarter of 2011. This well will be sized to meet the production needs for Phase 1 and 2 operations. The proposed well will be drilled to a depth of between 200-250 feet with a casing size of 16 inches and a capacity of 350 gpm. A second well may be needed for emergency preparedness purposes, this well, if required, would be drilled by International Isotopes Inc. during the construction phase of the project.

Environmental Report Documentation Impact: See Environmental Report Documentation Impact for RAI 11-a and RAI 1-a (Section 2.1.2.14 Water Well Drilling).

Environmental Report Documentation Impact: The first paragraph of ER Section, 3.4.6 will be revised to provide the estimated water use quantities for construction and operations for Phase 1 and Phase 2.

3.4.6 Quantitative Description of Water Use

A well (or wells) will be drilled an average estimated distance of up to 61 m (200 ft) into the Ogallala Aquifer. The well(s) will have the capacity to pump about 3.8 m^3/min (1,000 gal/min). It is anticipated that 7.57 m^3/day (2,000 gal/day) of groundwater will be used during Phase 1 construction and 3.79 m^3/day (1,000 gal/day) will be consumed during Phase 2 construction. Average and peak site water requirements for Phase 1 operations for all purposes are expected to be approximately 11.36 m^3/day (2,300 gal/day) and 29.53 m^3/day (7,800 gal/day), respectively. Average water usage during the integrated Phase 2 operations is anticipated to be 11.36 m^3/day (3,000 gal/day) to 17 m^3/day (4,500 gal/day) with peak usage less than 37.85 m^3/day (10,000 gal/day).

Environmental Report Documentation Impact: Remove Chapter 4 of the ER, Revision A in its entirety and replace with Chapter 4 rewrite provided as a separate document in the official RAI response package. See Chapter 4 re-write for Section 4.4 through 4.4.11 for water use quantities for construction and operations for Phase 1 and Phase 2.

Official Responses to Environmental Report RAIs

RAI 12

Provide copies of the IIFP site land surveys.

Information from surveys is necessary to accurately depict the site in figures and to provide a centroid for demography, environmental justice, air impacts, accident impacts, and monitoring.

RESPONSE:

Site land surveys of the IIFP Site are being conducted and will need to be confirmed. The land survey is currently scheduled for completion in the 2nd Qtr. of 2011.

Environmental Report Documentation Impact: None.

Official Responses to Environmental Report RAIs

RAI 13

Provide additional information regarding employment.

a. *Provide an employment curve so the peak number of employees and the date that peak is anticipated can be determined.*

The information is needed to determine the maximum impact, as driven by an increase in the region-of-interest population, to specific socioeconomic resources. Determining the approximate out-migration/work assignment completion dates influences the impacts of reduced dependency on some socioeconomic resources (housing and public education for example).

RESPONSE:

Employment ranges were provided in the Environmental Report for the various construction and operations phases. Table RAI 13-a-1 provides those employment ranges as well as the employment for the decommissioning phase of the IIFP Facility.

Table RAI 13-a-1 IIFP Facility Construction, Operation, and Decommissioning Employment

Year	Preconstruction		Construction		Operations		Decommissioning	Total	
	Low	High	Low	High	Low	High		Low	High
2011	35	70						35	70
2012			120	140				120	140
2013			120	140	80	120		200	260
2014					120	138		120	138
2015			150	180	120	138		270	338
2016			150	180	145	160		300	340
2017-2048					145	160		145	160
2049					145	160	40	185	200
2050							40		50
2051							40		

Table RAI-13-a-2 provides the expected peak employment of the IIFP Facility by quarter with the overlap between construction and operations (Phase 2) projecting the maximum in the ranges shown in Table RAI-13-a-1. It is now projected that the Phase 1 construction is complete during the 2nd quarter 2013 with the functional testing for Phase 1 operations to begin during the 3rd quarter 2013 with operations startup in the 4th quarter 2013. The Environmental Report will be revised to reflect these schedule changes.

Table RAI 13-a-2 Peak Employment During Construction, Operation, and Decommissioning of the IIFP Facility

Year	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
2011			35	70
2012	100	120	140	140
2013	140	120	80	120
2014	120	138	138	138
2015	138	138	238	318
2016	318	280	138	150
2017-2048	160	160	160	160
2049	200	200	200	200
2050	40	40	40	40
2051	40	40	40	40

Environmental Report Documentation Impact: It is projected that the Phase 1 construction will be complete during the 2nd quarter 2013 with the functional testing for Phase 1 operations to begin during the 3rd quarter 2013 with operations startup in the 4th quarter 2013. The Environmental Report will be revised to reflect these schedule changes. The sections below will be revised as indicated in the parenthesis as follows:

EXECUTIVE SUMMARY –subheading "Proposed License Action (Renamed subheading Revised 4th paragraph.)

The IIFP facility will be constructed in two phases, with Phase 1 completing the DUF_6 to depleted uranium tetrafluoride (DUF_4) process and the DUF_4 to fluorine products processes and the supporting infrastructure of the ~~plant~~facility. The Phase 1 Facility~~plant~~ is scheduled for startup by the end of 2013~~2~~. IIFP plans to expand the facility de-conversion capacity by completing construction of an expansion that wil result in a ~~of a~~ Phase 2 ~~plant~~ facility with a scheduled start by ~~mid~~late-2016. The Phase 2 ~~plant~~ facility will consist of additional de-conversion capacity using a process for direct conversion of DUF_6 to uranium oxides.

1.1 General Description of the IIFP Facility and Proposed License Action (Renamed section and revised 5th paragraph.)

The IIFP ~~initial~~ Phase 1 ~~plant~~Facility, scheduled for operation by end of 2013~~2~~ consists of two main chemical processes that, when integrated, will comprise the Fluorine Extraction Process and Depleted Uranium De-conversion Plant (FEP/DUP). In performing the de-conversion services, IIFP utilizes the fluoride extracted from the DUF_6 de-conversion to manufacture high-purity silicon tetrafluoride (SiF_4) and boron trifluoride (BF_3). These fluoride gas products are valuable materials for applications in the solar, semiconductor, and electronics industries. In addition, anhydrous hydrogen fluoride (AHF) is a by-product of the de-conversion process and is sold as a high demand chemical for various industrial applications.

Official Responses to Environmental Report RAIs

1.1 General Description of the IIFP Facility and Proposed License Action (Renamed section and revised 8th paragraph.)

Prec~~C~~onstruction of the Phase 1 ~~plant~~facility is expected to begin in late 2011 and startup of operations is expected to begin in ~~the late~~mid-2013~~2~~. The expansion construction for ~~a~~the Phase 2 ~~plant~~ facility is expected to begin in 2015 and operations start up in late 2016. The "Proposed Action" term that was used in the Revision A of the Environmental Report has been renamed "Proposed License Action." The ER does however include the Environmental Impacts and Cumulative Effects for both the Proposed License Action (which is the Phase 1 Facility) combined with the Phase 2 Facility in order for NRC to prepare an Environmental Impact Statement (EIS) for the integrated Phase 1 and Phase IIFP Facility. Prior to the Phase 2 expansion, IIFP will prepare and submit an amended license application for the Phase 2 Facility. At the end of its useful life, the ~~plant~~IIFP Facility ~~would~~ will be decommissioned consistent with the decommissioning plan that is developed and submitted in the IIFP License Application, Chapter 10, "Decommissioning".

1.2.3 Projected Construction and Operational Startup Schedules (Revised 1st paragraph.)

Construction of the Phase 1 ~~plant~~ facility is expected to begin in ~~late~~ early 201~~1~~2 and startup of operations in the ~~late~~ mid 2013~~2~~. IIFP intends to request an exemption for some pre-~~license~~ construction that could start by ~~early~~mid 2011. In this ER, pre-~~license~~ construction is considered in evaluating the environmental impacts. It is anticipated that approval for pre-~~license~~ construction will be obtained and that some selective construction activities will be accomplished prior to issuance of a license by NRC. These pre-~~license~~ construction activities will be preparatory in nature and will not involve any process or safety-related equipment or systems.

1.2.3 Projected Construction and Operational Startup Schedules (Revised Table 1-2.)

Major milestones are shown in Table 1-2.

Table 1- ~~1~~2 Project Major Milestones

Milestones	Projected Date
Submit Licensing Application to NRC for Phase 1 Facility	End of 2009 (Complete)
Environmental Report to NRC for Phases 1 and 2	End of 2009 (Complete)
~~Complete~~ Start Engineering for Phase 1	~~3rd Quarter~~mid 2011
Start Pre-~~Licensing~~ Construction	3rd Quarter 2011
Obtain NRC License for Phase 1	~~3rd~~-4th Quarter 2011
Initiate Phase 1 Facility Construction	~~3rd~~-2nd Quarter ~~2011~~2012
Complete Construction of Phase 1 Facility	~~3rd~~-2nd Quarter 2013~~2~~
Startup Phase 1 Facility	4th-3rd Quarter 2013~~2~~
Submit Phase 2 amended License Application	2nd Quarter 2013
Complete Phase 2 Engineering and Initiate Phase 2 Facility Construction	~~1st~~-2nd Quarter 2015
Complete Construction of Phase 2 Facility	~~1st~~-2nd Quarter 2016
Startup Phase 2 ~~Plant~~ Facility	2nd Quarter 2016

Official Responses to Environmental Report RAIs

2.1 Proposed License Action (Renamed section and revised 5th paragraph.)

Phase 1, with a projected startup date of ~~late~~mid-2013~~2~~, consists mainly of two processes:

- DUF_6 de-conversion to depleted uranium tetrafluoride (DUF_4), i.e. the DUF_6 to DUF_4 plant.
- The Fluorine Extraction Process for producing SiF_4 and BF_3 by reacting the DUF_4 produced in the de-conversion step with the oxides of silicon (SiO_2) and boron (B_2O_3), respectively.

4.5.2 Proposed Schedule of Activities (Revised section.)

The following is a tentative, abbreviated schedule of proposed activities. Refer to ER Section 1.2.3, "Projected Construction and Operational Startup Schedules," for major steps in the Proposed ~~Action~~IIFP Facility:

- Submit Environmental Report--December 2009 (complete)
- Submit Integrated Safety Analysis--December 2009 (complete)
- Submit Facility License Application--December 2009 (complete)
- Initiate ~~Pre-licensing Construction~~Preconstruction ~~Early~~ 3rd Qtr. 2011
- Initiate Phase 1 Facility Construction--~~Late~~Early 2012~~1~~
- Achieve Phase 1 Start-up Operation ~~Late~~4th Qtr. 2013~~2~~
- Complete Phase 2 Construction ~~March~~Mid 2016
- Achieve Phase 2 Start-up Operation ~~June~~ Mid 2016

4.10.1 Facility Construction (Revised section.)

Pre-~~licensing~~ construction activities are assumed to begin in 2011 and to conclude ~~in the fall of~~prior to the end of 2011 when NRC is expected to approve the IIFP license. Pre-~~licensing~~ construction activities, described in Section 4.1.1.1, "Construction Impacts," will be preparatory in nature and will not involve any process or safety related equipment or systems. Approximately 35 to 70 workers will be involved in preconstruction activities delineated in Section 2.1.2, "Site Construction."

Phase 1 Construction

IIFP Site ~~general~~ Phase 1construction is scheduled to begin in 2012~~1~~, with construction continuing into 2013~~2~~.The maximum construction workforce during Phase 1 is anticipated to range from 120 to 140 workers during the 2012~~1~~-2013~~2~~ period.

Phase 2 Construction

An additional 30 to 40 workers will be required during the construction of the add-on buildings for the Phase 2 Facility. Construction of Phase 2 buildings is scheduled to be accomplished in 2015-2016 with an average construction crew of 150 to 180 workers.

4.11.4 Proposed License Action (Renumbered and Renamed, revised 1st paragraph)

~~If the Proposed Action is undertaken, pre-licensing construction of the Proposed IIFP Facility will begin in early 2011. In late 2012, Phase 1 operation of the facility will begin. By 2016, Phase 2 operation of the~~

~~Proposed IIFP Facility is expected to be fully operational.~~ The Proposed License Action addresses only the construction and operation of the Phase 1 IIFP Facility. Prior to a future expansion that results in the Phase 2 Facility, IIFP will prepare and submit an amended license application for the Phase 2 Facility. However, the environmental justice impacts will be assessed for the construction and operation of both Phase 1 and Phase 2 Facilities (integrated IIFP Facility).

4.11.4.2 Site Preparation and Construction (Renumbered and revised 1st paragraph.)

Site preparation and construction of the ~~Proposed~~ IIFP Facility may require a labor force of as many as 200 employees; construction employment is projected to vary depending on the site preparation and construction activities under way at any given time. Preparation of the IIFP facility site and construction of the IIFP ~~f~~Facility is projected to take approximately 20-24 months, beginning in 2012~~1~~ and ending in 2013~~2~~. During the site preparation and construction ~~phase~~stage of the project, environmental impacts (discussed in detail in the sections noted in parentheses) may include the following: (Bullets omitted.)

4.11.4.3~~2~~ Operation (Revised 1st paragraph.)

Operation of the ~~Proposed~~ IIFP Facility will be expected to begin operation of the Phase 1 ~~plant~~ facility in late 2013~~2~~ and the Phase 2 ~~plant~~ facility in ~~mid~~-the fall of 2016. The facility is projected to employ as many as 138 FTEs engaged in Phase 1 operations and 160 FTEs engaged in Phase 2 operations. During the operation ~~phase~~stage of the project, potential environmental impacts (discussed in detail in the sections in parentheses) may include the following: (Bullets omitted.)

7. COST-BENEFIT ANALYSIS (Revised 3rd paragraph.)

It must be noted that all Chapters of the ER assess, where applicable, the environmental impacts of not only a Phase 1 near-term construction, with facility operations scheduled to begin in late 2013~~2~~, but also that of a later expansion to become a Phase 2 Facility.

7.1.2 Basis of Construction and Operating Costs-Benefit Estimates ~~for the Proposed Action~~ (Renamed section and revised 1st paragraph.)

The project construction and operation cost estimates assume that project detailed engineering begins in mid-~~2010~~2011, and some ~~pre-licensing construction~~preconstruction activities may start by ~~early~~ late 2011. Upon approval of the NRC license application, the full construction is expected to begin by the end of 2nd quarter 201~~1~~2 with startup of the Phase 1 operation for functional testing by ~~end~~ the 2nd quarter of 2013~~2~~. It is assumed that the facility would not reach significant production operating levels and receipt of revenue streams until mid- to-late 2013, after operational checkout and test production runs are completed and operations are well underway.

8.3.10 Socioeconomic Impacts (Revised 1st paragraph.)

Pre-~~licensing~~ constructions at the IIFP Ssite is scheduled for ~~early~~ mid-2011, with general construction continuing 20 to 24 months into 2013~~2~~. A peak construction force of about 200 workers is anticipated during the period 2012~~1~~-2013~~2~~.

Official Responses to Environmental Report RAIs

RAI 13

Provide additional information regarding employment.

b. *Provide anticipated annualized wage (gross payments to employee, not total payroll costs, which would include benefits or overhead) for the average Phase 1 construction workforce employee (not by job category).*

The information is needed to determine the maximum impact, as driven by an increase in the region-of-interest population, to specific socioeconomic resources. Determining the approximate out-migration/work assignment completion dates influences the impacts of reduced dependency on some socioeconomic resources (housing and public education for example).

RESPONSE:

It is anticipated that Phase 1 construction will begin in 2012 with preconstruction to start in the third quarter 2011 if the NRC license has not be received. The workforce for Phase 1 and Phase 2 construction is indicated in Table RAI 13-b-1. The annualized base wage for the average Phase 1 construction worker will be $32,700 for a 40-hour week. IIFP will work 5 days/week for 50 weeks.

Table RAI 13-b-1 Maximum Employment During Phase 1 and Phase 2 Construction of the IIFP Facility

Year	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
2011			35	70
2012	100	120	140	140
2013	140	120		
2014				
2015			100	180
2016	180	150		

Environmental Report Documentation Impact: None.

Official Responses to Environmental Report RAIs

RAI 13

Provide additional information regarding employment.

c. *Identify when Phase 1 operations workers will arrive on site (by month and year), total operations workforce (preferably a specific estimated number, not a range), and number of workers that will overlap with the construction workforce for Phase 1. Include an employment curve so the peak number of operations employees and the date that peak is anticipated can be determined.*

The information is needed to determine the maximum impact, as driven by an increase in the region-of-interest population, to specific socioeconomic resources. Determining the approximate out-migration/work assignment completion dates influences the impacts of reduced dependency on some socioeconomic resources (housing and public education for example).

RESPONSE:

There will be minimal overlap with the ending of Phase 1 construction and Phase 1 operations. The construction will be complete during the second quarter 2013 while functional checkout of the systems will occur during the third quarter 2013 with startup occurring during the fourth quarter 2013. The operations employment curve is shown in Table RAI 13-c-1.

Table RAI 13-c-1 Maximum Employment During Phase 1 and Phase 2 Operations of the IIFP Facility

Year	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
2011				
2012				
2013			80	120
2014	120	138	138	138
2015	138	138	138	138
2016	138	138	138	150
2017-2048	160	160	160	160
2049	160	160	160	160
2050				
2051				

Environmental Report Documentation Impact: None.

RAI 13

Provide additional information regarding employment.

d. Provide an estimate of the peak workforce (i.e., an estimated number, rather than a range is needed to assess resources impacts in the ER) for Phase 2 construction only, the anticipated Phase 2 construction start date (month and year), the duration of this construction phase workforce on site (from month and year to month and year). Include an employment curve so the peak number of employees and the date that peak is anticipated can be determined.

The information is needed to determine the maximum impact, as driven by an increase in the region-of-interest population, to specific socioeconomic resources. Determining the approximate out-migration/work assignment completion dates influences the impacts of reduced dependency on some socioeconomic resources (housing and public education for example).

RESPONSE:

The employment curve for Phase 2 construction as well as Phase 1 construction is shown in the response to RAI 13-b as shown in Table RAI 13-b-1, "Maximum Employment During Phase 1 and Phase 2 Construction of the IIFP Facility."

Environmental Report Documentation Impact: None.

Official Responses to Environmental Report RAIs

RAI 13

Provide additional information regarding employment.

e. *Provide anticipated annualized wage (without benefits or overhead) for the average Phase 2 construction workforce employee (not by job category).*

The information is needed to determine the maximum impact, as driven by an increase in the region-of-interest population, to specific socioeconomic resources. Determining the approximate out-migration/work assignment completion dates influences the impacts of reduced dependency on some socioeconomic resources (housing and public education for example).

RESPONSE:

The annualized wage (without benefits or overhead) for the average Phase 2 construction workforce employee is $29,600 for a 40-hour work week.

Environmental Report Documentation Impact: None.

Official Responses to Environmental Report RAIs

RAI 13

Provide additional information regarding employment.

f. Identify when Phase 2 operations workers will arrive on site (by month and year), total operations Phase 2 workforce (specific number, not a range), and number that will overlap with the construction workforce of Phase 2 and the operations workforce of Phase 1. Provide an employment curve so the peak number of employees and the date that peak is anticipated can be determined.

The information is needed to determine the maximum impact, as driven by an increase in the region-of-interest population, to specific socioeconomic resources. Determining the approximate out-migration/work assignment completion dates influences the impacts of reduced dependency on some socioeconomic resources (housing and public education for example).

RESPONSE:

The overlap in employment during Phase 1 and Phase 2 operations is shown in Table RAI 13-c-1, "Maximum Employment during Phase 1 and Phase 2 Operations of the IIFP Facility." The overlap in employment during Phase 1 and Phase 2 operations and Phase 2 construction is shown in Table RAI 13-a-2, "Peak Employment during Construction, Operation, and Decommissioning of the IIFP Facility."

Environmental Report Documentation Impact: None.

Official Responses to Environmental Report RAIs

RAI 14

Provide reports of ecological field studies.

It is our understanding that IIFP is conducting seasonal ecological surveys of the site over a one-year period. Provide any reports generated by these surveys. Information from trip reports or quarterly summaries is necessary to ensure complete and accurate ecology descriptions within the EIS. Given that the studies would continue to be conducted after the Draft EIS is completed, interim reports are important.

RESPONSE:

The vegetation survey conducted by GL Environmental, Inc. has been completed for 2010 (GLEI, 2010a). The 2010 Vegetation Survey Report is provided to the NRC separately from these RAI responses. Sections 3.5.3 and 3.5.4 of the Environmental Report, Revision A, will be revised to reflect information from that survey.

Additionally, field work has been completed by GL Environmental, Inc. to evaluate the IIFP Site for the possible presence of the dunes sagebrush lizard (called the sand dune lizard in the Environmental Report). Their report, "Status and Habitat of the Dunes Sagebrush Lizard at the Proposed Site for the International Isotopes Fluorine Products Facility in Lea County, New Mexico," (GLEI, 2010b) is provided to the NRC separately from these RAI responses. Section 3.5.7.2, "Sand Dune Lizard," will be revised to reflect information from this field work.

A wildlife baseline study was started in the 3rd Quarter 2010 and is scheduled for completion in 3rd Quarter 2011. In addition, a survey for the lesser prairie-chicken is scheduled for completion in 2nd Quarter 2011. Interim reports on these ecological field studies are not available at this time, upon completion, copies of these respective reports will be provided to the NRC separate from these RAI responses. When results become available, pertinent information from these ecological field studies will be incorporated in future revisions of the ER, as applicable.

Environmental Report Documentation Impact: The 3rd paragraph of Section 3.5.3, "Major Vegetation Characteristics," of the Environmental Report, Revision A, will be revised to incorporate information from the 2010 Vegetation Survey. The 4th, 5th, and 6th paragraphs of Section 3.5.3 will be deleted. Section 3.5.3 will be revised to read as follows:

3.5.3 Major Vegetation Characteristics

The general vegetation community type that the subject property is located in is classified as Plains and Great Basin Grasslands. The community is further characterized by the presence of forbs, shrubs, and grasses that are adapted to the deep sand environment that occurs in parts of southeastern New Mexico.

The Plains Grasslands north of the Mescalero Ridge on the eastern portion of the Lea County consist of the short-grass, mid-grass, and tall-grass prairies of the National Grasslands. These grasslands extend throughout the Great Plains physiographic province and occur within the Southern High Plains, Pecos Valley, Redbed Plains, and Texas High Plains eco-region sections. Climate ranges from subhumid to semiarid as these grasslands extend from east to west. The characteristic plant species that are abundant throughout the short-grass prairie include blue grama and buffalo grass. The mid-grass prairie ecosystem

is co-dominated by little bluestem, blue grama, and plains bristle grass. The tall-grass prairie is dominated by big bluestem. These different prairie ecosystems are aggregated and reduced to one category for this assessment and reflects a wide range of ecological properties and processes (USDA, 2004).

The Basin and Range Grassland occurs south of the Mescalero Ridge. These grasslands are higher in elevation and climatically cooler and moister than desert grasslands and are adjacent to and intermingle with juniper savanna ecosystems. The Great Basin Grasslands are similar to Brown's (1994) Plains and Great Basin grasslands and Dick-Peddie's (1993) Plains–Mesa grasslands ~~except the geographic range of this category for this assessment is restricted to the Basin and Range Physiographic province. Diagnostic plant species include blue grama, galleta, Indian ricegrass, and sideoats grama. Some dropseeds and wolftail are co-dominant and add to the diversity of this category. The Great Basin grasslands tend to be drier than the Shortgrass Steppe grasslands and have a blend of warm and cool season graminoid and forb species. Shrubs that are present in association with grassland vegetation of this category include fourwing saltbush, sacahuista, small soapweed yucca, skunkbush sumac, and catcall mimosa. As this grassland integrades with savanna ecosystems, minor amounts of trees such as emory oak, alligator juniper, and Utah juniper dominated woodlands are evident (USDA, 2004). The IIFP site generally is characteristic of the Brown's (1994) vegetation.~~ The majority of plant species and soils present at the IIFP Site are typical of Plains-Mesa Grassland and Desert Grassland Communities (Dick-Peddie 1993). Plains-Mesa Grassland and Desert Grassland Communities are characterized by the presence of significant amounts of grasses with less than 10% of total cover being forbs and shrubs. Typical grasses for Plains-Mesa Grassland and Desert Grassland Communities are *Bouteloua* species (grama grasses), buffalo grass, Galleta grass, Indian ricegrass, *Aristida* species (three-awn grasses), *Sporobolus* species (drop seed grasses), needle-and-thread grass, and western wheatgrass. Typical shrub species present on Plains-Mesa Grassland and Desert Grassland Communities are honey mesquite and *Echinocereus* species (hedgehog cacti).

~~Hairy grama is prevalent on the IIFP site and is a native, warm-season, perennial grass. The height is between 10 and 20 inches. The leaf blade is flat or slightly rolled; narrow; mostly basal; margins hairy. See Figure 3-33. This grass yields more if it is not overgrazed and grazing is deferred every 2 to 3 years during the period of most active growth. Hairy grama makes little growth before summer rains begin. If moisture is adequate, it matures rapidly.~~

~~During exceptionally dry years, it produces little forage but withstands drought well. In the northern part of its range, this grass usually has only 1 or 2 spikes per seedhead and short stolons that form a sod. Further south, it grows taller, more like a bunch grass, and has 2 to 4 spikes per seedhead. It is adapted to sandy and sandy loam soils and gravelly loams and does well on soils neutral to slightly calcareous. It is often associated with blue grama, but is more drought resistant (NRCS, 2007).~~

~~Ring Muhly (Figure 3-34) is also observed on the site with hairy grama and other various forbs and grasses. Mesquite, prickly pear, horse crippler cacti, and rainbow cacti were also observed. See Figure 3-35 for a typical site photograph of ground cover on the IIFP site.~~

A vegetation survey (GLEI, 2010a) was conducted at the proposed location in Section 27, Township 18 South, Range 36 East, Lea County, New Mexico. Several data collection methodologies were employed to determine total vegetative cover, production of perennial grasses and shrubs, and shrub density at the IIFP Site.

A total of eighteen plant species was observed in cover transects during the 2010 survey (Table 3-13). The total vegetative cover was 45.1%. Of this, 97.6% of the relative vegetative cover consisted of

perennial grasses. *Bouteloua gracilis* (blue grama) contributed the largest portion of relative cover at 27.8%, followed by *Scleropogon brevifolius* (burrograss) at 4.3%. *B. eriopoda* (black grama) and *Pleuraphis jamesii* (James' Galleta grass) were the next two largest contributors. These species represented 2.6% and 2.7% of the relative vegetative cover, respectively (GLEI, 2010a).

Table 3- 13 List of species observed on the IIFP Site

Scientific Name	Common Name
Forbs	
Croton texensis	Texas Croton
Helianthus ciliaris	Texas Blueweed
Grindelia nuda	Curly-Cup Gumweed
Two unknown species	Two unknown species
Grasses	
Bouteloua curtipendula	Side-oats grama
Bouteloua eriopoda	Black grama
Bouteloua gracilis	Blue grama
Eragrostis trichodes	Sand lovegrass
Lycurus setosus	Bristly wolfstail
Muhlenbergia pungens	Sandhill muhly
Pascopyrum smithii	Western wheatgrass
Pleuraphis jamesii	James' Galleta
Scleropogon brevifolius	Burrograss
Sporobolus cryptandrus	Sand dropseed
Stipa comata	Needle and thread grass
Shrubs	
Prosopis glandulosa	Honey mesquite
Echinocereus Sp	Hedgehog cactus

Two shrub species occurred in the cover transects. Shrubs contributed 1.2% of the relative vegetative cover. *Prosopis glandulosa* (honey mesquite) was the dominant shrub present with 0.54% total cover (GLEI, 2010a).

Vegetation species present in cover transects consisted of the following forms: five (5) forb species, eleven (11) grass species, and two (2) shrub species. Two forb species were not able to be identified during the 2010 IIFP Vegetation Survey due to lack of distinguishing floral characteristics. Subsequent surveys and reports will attempt to identify these unknown species (GLEI, 2010a).

The IIFP Site is dominated by perennial grasses with 96.8% of the relative frequency. Blue grama accounted for 62.6% of the relative frequency value. Black grama was the second greatest contributor with 7.3% of the relative frequency. Forbs totaled 2.5% of the relative frequency with *Croton texensis* (Texas croton) at the greatest value of 1.1%. Shrubs accounted for the least relative frequency at 1.2%. Shrub frequency was predominantly honey mesquite at 1.1% of the relative frequency (GLEI, 2010a). See Figures 3-35 and 3-36 for a typical site photographs of ground cover on the IIFP Site.

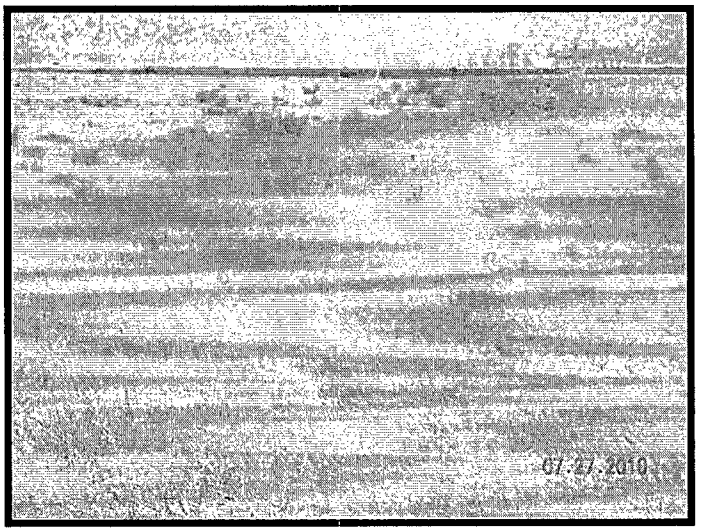


Figure 3-35 Perennial Vegetation Cover on IIFP Site

Figure 3-36 Site Photograph of Ground Cover on IIFP Site

Environmental Report Documentation Impact: The 5th paragraph of Section 3.5.4, "Habitat Importance," of the Environmental Report, Revision A, will be revised to show the contact with appropriate State and federal officials for threatened or endangered plant species of the IIFP Site. The 5th paragraph of Section 3.5.4 will read as follows:

Shrubs provide habitat and seeds for bird and small mammal species. Perennial grasses provide forage for large grazing mammals and seeds for small mammals. The dominant plant species should be distributed uniformly across the site, such that no one area of the site contains that specie exclusively. ~~New Mexico Department of Game and Fish, U.S. Fish and Wildlife Service, and the New Mexico State Forestry Department personnel will be contacted for any threatened or endangered plant species on the IIFP site~~

Consultation with the New Mexico Department of Game and Fish and U.S. Fish and Wildlife Service indicated that there are currently no threatened or endangered plant species listed for Lea County, New Mexico. Additional consultation was sought with the New Mexico Ecological Services for potential habitat and known populations of a candidate species (Wright's Marsh Thistle). The nearest location containing known populations of Wright's Marsh Thistle are in the Black River drainage at least 32.2 km (20 mi) southwest of Carlsbad, New Mexico and at least 97 km (60 mi) from the IIFP property. Additionally, no potential habitat was found to be present on the IIFP Site for the Wright's Marsh Thistle during the vegetation survey.

Environmental Report Documentation Impact: The 3rd paragraph of the "Habitat Requirements" subsection of Section 3.5.7.2, "Sand Dune Lizard," will be revised to include the conclusion of the field work conducted to evaluate the site for the possible presence of the sand dune lizard. That 3rd paragraph will become the 3rd and 4th paragraphs of this subsection. The 3rd and 4th paragraphs of the Environmental Report, Section 3.5.7.2, "Habitat Requirements" subsection, will be revised to read as follows:

Dunes that have become completely stable by vegetation appear to be unsuitable habitat. The sand dune lizard diet consists primarily of insects such as ants, crickets, grasshoppers, beetles, spiders, ticks and other arthropods. Most feeding appears to take place with or immediately adjacent to patches of vegetation. It is likely that the IIFP Ssite provides an adequate food source for the sand dune lizard.~~;~~

The proposed site for the IIFP is comprised of a shortgrass prairie with intermittent mesquite. Shortgrass prairies are comprised of several herbaceous plant-soil associations including side-oats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), and buffalograss (*Büchloe dactyloides*) on well drained soils or rocky slopes and blue grama/hairy grama and (*Bouteloua hirsuta*) on loamy or sandy soils. The IIFP Site contains sandy loam soils. The lack of the shinnery oak on the proposed location leads to the conclusion that the sand dune lizard does not exist at this site. The site does not support shinnery oak or have the required sand blowouts which comprise the sand dune lizard's primary habitat. In addition to the lack of appropriate soil types, there are not enough sand particles in the appropriate size range to meet the habitat needs of this species (GLEI, 2010b). ~~h~~However, the habitat areas likely containing the sand dune lizard starts approximated 19~~1~~.3 km (~~12~~ 7 mi) south of the IIFP Ssite. See Figure 3-~~40,~~41 "Expected Range of the Sand Dune Lizard," in Lea, Eddy, and Chaves Counties, New Mexico (Painter, 2004). The lack of the shinnery oak and sand dunes on the proposed location makes it unlikely that the dunes sagebrush lizard exists at this location.

Official Responses to Environmental Report RAIs

RAI 15

Provide the rationale, including appropriate documentation, that jurisdictional wetlands are, or are not, present within the proposed 40-acre facility (plant compound) construction area.

It is our understanding that IIFP may submit a jurisdictional wetlands determination application for the depressional areas that appeared to support some hydrophytic vegetation. During the NRC site visit on July 27, 2010, the NRC staff noted one depression had standing water.

RESPONSE:

It should be noted that a very heavy rainfall event (approximately 8 in) occurred the previous weekend prior to the July 27, 2010 NRC visit. GL Environmental, Inc. evaluated the IIFP Site for a jurisdictional determination with respect to Waters of the United States on October 15, 2010. The depressional areas during this site visit were dry. The jurisdictional determination letter to the USACE for Section 27, Range 18 South, Township 36 East (GLEI, 2010c) is attached to these responses to the RAIs. Communications with the USACE confirm that the USACE agrees with the GL Environmental assessment. The Jurisdictional Determination from the USACE that there are no waters of the United States on the project site was issued January 26, 2011.

According to New Mexico Environment Department (NMED) Surface Water Quality Bureau, the State of New Mexico does not have a wetland delineation procedure other than the United States Army Corps of Engineers (USACE) wetland delineation procedure. If surface water is present in the depressions on Section 27, the water may be considered "Waters of the State". Currently there are no New Mexico state regulations against conducting activities within the depressions, but liquid discharges would need to be authorized under the appropriate state and federal permits. International Isotopes Flourine Products (IIFP) will not discharge process water into surface waters as a result of facility operations. IIFP will obtain coverage under an Environmental Protection Agency (EPA), National Pollutant Discharge Elimination System (NPDES) Stormwater permit for both construction and operation of the IIFP facility. The EPA, Region 6 is the permitting authority for the Clean Water Act in the State of New Mexico. Therefore the EPA, not the State of New Mexico, is the permitting authority for NPDES permits in New Mexico.

Environmental Report Documentation Impact: Section 3.4.9, "Description of Wetlands," will be revised to reflect the results of the surface depressions evaluation conducted by GL Environmental, Inc. October 15, 2010. Section 3.4.9 will be revised as follows:

3.4.9 Description of Wetlands

~~An evaluation of the site and of available wetlands information has been used to determine that the site does not contain jurisdictional wetlands or those areas subject to the regulations of the *Clean Water Act of 1977*. Jurisdiction wetlands are generally concave or low-lying topographic forms that collect, store, or flow water frequently enough to favor a majority of plants that are adapted to saturated soil conditions. There exist "undivided" wetlands as shown in Figure 3-27, "Watercourses, Floodplains, and Playas Map."~~

Small surface depressions are located throughout Section 27. Several of the most substantial depressions are identified on Figure 3-3 "Location of Intermittent Surface Water Around the IIFP Site." The depressions tend to be circular in shape and range from 15.2 m to 91.4 m (50 ft to 300 ft) in diameter and 0.9 to 1.5 m (3 ft to 5 ft) in depth below the surrounding grade. The depressions occasionally fill with

water in response to precipitation events. The frequency and duration of surface water in the depressions is unknown, however, it is likely that water or saturated conditions are present for less than 10% of the year (GLEI, 2010c).

A change from the surrounding vegetation community occurs within the surface depressions. Vegetation within the depressions is dominated by the perennial grasses Burro grass (*Scleropogon brevifolius)* and Galleta Grass (*Pleuraphis jamesii*). Neither plant species are included in the *National List of Vascular Plant Species that Occur in Wetlands: 1996 National Summary*. Vine Mesquite (*Panicum obtusum*), Western wheatgrass (*Pascoyrum smithii*), and Blueweed (*Helianthus ciliaris*) were present at low densities (<5% of areal herbaceous cover). Each of these three species is described as equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%). in the National List. A soil core was collected from two of the deeper depressions on Section 27. Each of the cores was approximately 16 inches in depth. The soil consisted of dark brown sandy to silty loam with some organic matter. No mottling or sulfidic material was observed in the cores (GLEI, 2010c).

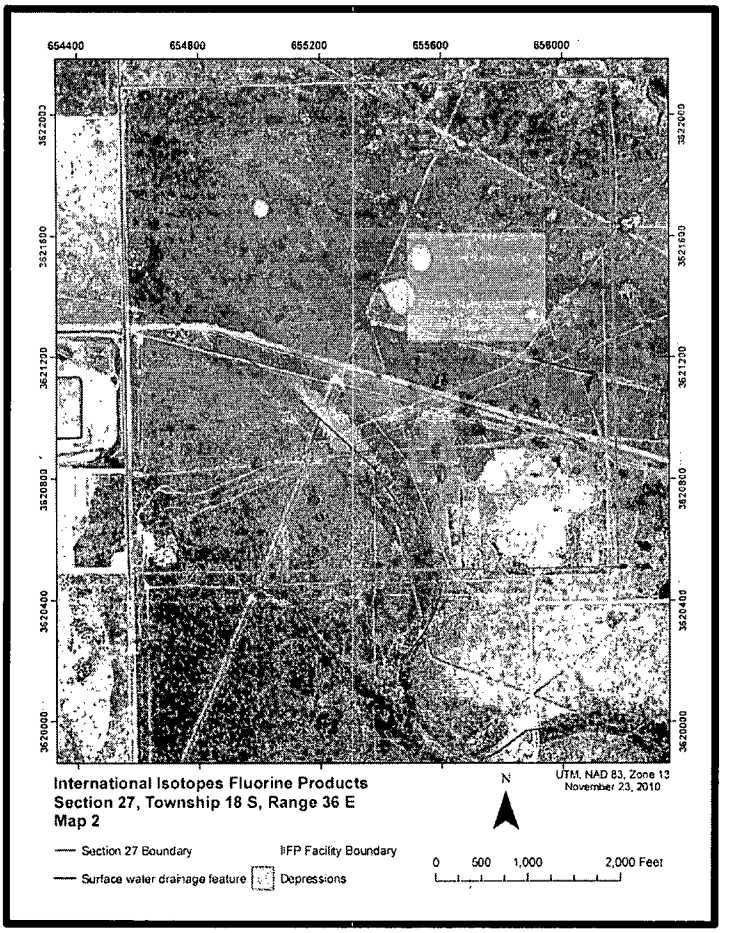
"Waters of the U.S" are not present in Section 27. Surface drainage flows are infrequent, low volume and short in duration. Additionally, the drainage is not connected through surface channels to regional surface water features. See Section 3.1.1, "Land Use Status," for additional information on surface drainage and for a site map showing the surface drainage and the surface depressions. Surface depressions are not dominated by wetland plants, lack indicators of anoxic soil conditions, and most likely are not saturated for more than 10% of the year. The surface depressions lack the characteristics of wetlands as defined in the Corps of Engineers "Wetlands Delineation Manual," January 1987 (GLEI, 2010c). Concurrence has been obtained from the USACE that the water features on Section 27 are isolated and "Waters of the U.S." are not present within Section 27 (USACE, 2011). According to NMED Surface Water Quality Bureau, the State of New Mexico follows the USACE wetland delineation procedure.

Environmental Report Documentation Impact: Section 3.1.1, "Land Use Status," will be revised to reflect the results of the surface drainage conducted by GL Environmental, Inc. October 15, 2010. A new paragraph fifth will be added and former paragraph five will shift down with revisions. Rename and replace figure for Figure 3-3 "Location of Intermittent Surface Water Around the IIFP Site." Section 3.1.1 will read as follows:

Two small intermittent drainages are located on the southwest quadrant of Section 27. Surface flow most likely occurs in response to precipitation events. The drainages grade to the southeast and coalesce approximately 396 m (1,300 ft) south of the section boundary. The western drainage is clearly defined on Section 27 due to a moderately incised channel and the presence of Honey Mesquite bushes along the banks. The drainage to the east is shallow and not easily delineated from the surrounding land surface (GLEI, 2010c).

The coalesced drainage continues to grade to the south/southeast toward Monument Draw. Monument Draw is a major surface drainage feature in southern Lea County and is clearly present in topographical maps approximately 22.5 km (14 mi) southeast of the section boundary. Although the drainage present in Section 27 grades toward Monument Draw, a review of topographic maps did not reveal a clear physical connection to Monument Draw. The drainage terminates in a playa approximately12.9 km (8 mi) southeast of the section (GLEI, 2010c). Surface drainage at the site is also contained within a few depressions that have no external drainage. See Figure 3-3 for location of these depressions and the two intermittent drainages from the site. Runoff does not drain to one of the state's major rivers. Surface water is lost through evaporation, resulting in high salinity conditions in both the waters and soils associated with the playas. These conditions are not favorable for the development of viable aquatic or riparian

habitats. ~~There is also a small stream that runs from the northwest to the southeast across the property that is predominantly dry during the year. See Figure 3-3 which is a topographic map of the proposed IIFP site which shows the low terrain where the stream and playas are located during periods of rain. There is no designated Federal Emergency Management Agency (FEMA) Zone A area at the IIFP location that would be inundated during a 100-year flood event. Refer to Figure 3-27, "Watercourses, Floodplains, and Playas Map."~~

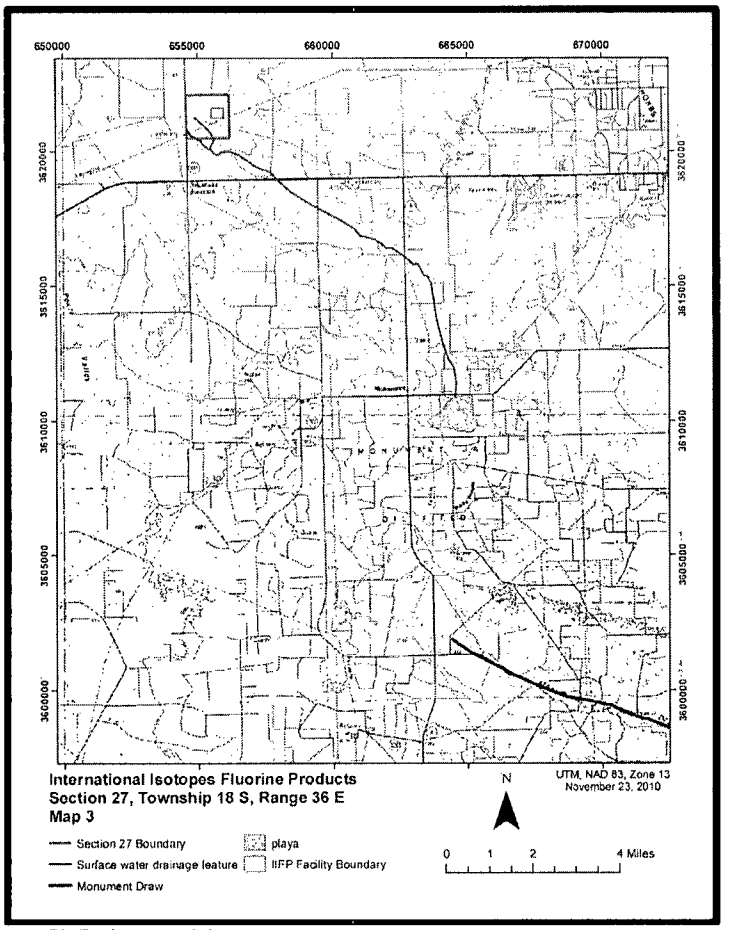


Source: GI Environmental, Inc.

Figure 3- 3 Location of Intermittent Surface Water Around the IIFP Site ~~**Topographic Map of the Proposed IIFP Site**~~

Environmental Report Documentation Impact: Section 3.4.12.2, "Drainage Areas," will be revised to reflect the results of the surface drainage conducted by GL Environmental, Inc. October 15, 2010. Insert new Figure 3-28 "Surface Drainage from the IIFP Site" (after text). The 3rd paragraph of Section 3.4.12.2 will be revised to read as follows:

Two small intermittent drainages are located on the southwest quadrant of Section 27. The drainages grade to the southeast and coalesce approximately 396 m (1,300 ft) south of the section boundary. The coalesced drainage continues to grade to the south/southeast toward Monument Draw. Monument Draw is a major surface drainage feature in southern Lea County and is clearly present in topographical maps approximately 22.5 km (14 mi) southeast of the section boundary. Although the drainage present in Section 27 grades toward Monument Draw, a review of topographic maps did not reveal a clear physical connection to Monument Draw. The drainage terminates in a playa approximately 12.9 km (8 mi) southeast of the section (GLEI, 2010c). See Figure 3-28. Thus, ~~S~~surface drainage at the 259 ha (640-ac) Section is contained within several local depressions ~~playas lakes~~ that have no external drainage. Runoff does not drain to Pecos River. The Pecos River Basin has a maximum basin width of 209 km (130 mi) and a drainage area of 115,345 km^2 (44,535 mi^2)



GL Environmental, Inc.

Figure 3- 28 Surface Drainage from the IIFP Site

Environmental Report Documentation Impact: The U.S. Army Corps of Engineers has issued it jurisdictional determination of isolated waters in Section 27 of the IIFP Site (USACE, 2011). A copy of

that determination will be added to Appendix B" of the Environmental Report "Consultation Documents." The copy of the correspondence is below:

Official Responses to Environmental Report RAIs

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
Las Cruces Regulatory Field Office
505 S. Main St. Suite 142
Las Cruces, New Mexico 88001
(575)-556-9939

January 26, 2011

REPLY TO
ATTENTION OF

Regulatory Division
New Mexico/Texas Branch

SUBJECT: Action No. SPA-2011-00030-LCO, International Isotopes Fluorine Products Facility

G. L. Environmental, Inc.
Attn: Mathew Lane
P. O. Box 1746
Las Vegas, New Mexico 87701

Dear Mr. Lane:

The U.S. Army Corps of Engineers (Corps) is in receipt of your letter dated January 12, 2011 concerning a request by GL Environmental Inc. for an approved jurisdictional determination (A-JD) of an isolated waters for a project site located 10 miles west of Hobbs, Lea County, New Mexico. The activity involves construction of a fluorine products facility located within section 27, T 18 S, R 36 E, on an approximately 40 acre site. The facility will utilize depleted uranium hexafluoride to produce high purity inorganic fluorides, uranium oxides, and anhydrous hydrofluoric acid. We have assigned Action No. SPA-2011-00030-LCO to this activity. To avoid delay, please include this number in all future correspondence concerning this project.

We have reviewed this project in accordance with Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act of 1899 (RHA). Under Section 404, the Corps regulates the discharge of dredged and fill material into waters of the United States, including wetlands. The Corps responsibility under Section 10 is to regulate any work in, or affecting, navigable waters of the United States. Based on your description of the proposed work, other information available to us, and current regulations and policy, we have determined that this project will not involve any of the above activities. Therefore, it will not require Department of the Army authorization under the above laws. However, it is incumbent upon you to remain informed of any changes in the Corps Regulatory Program regulations and policy as they relate to your project.

The Corps based this decision on an approved jurisdictional determination (JD) that there are no waters of the United States on the project site. The basis for this approved JD is: that the project site contains intrastate waters with no nexus to interstate or foreign commerce. The JD form is available at http://www.spa.usace.army.mil/reg/Jurisdictional_Determinations/jurisdictional_determinations.asp. This approved JD is valid for a period of no more than five years from the date of this letter unless new information warrants revision of the determination before the expiration date.

You may accept or appeal this approved JD or provide new information in accordance with the Notification of Administration Appeal Options and Process and Request For Appeal (NAAOP-RFA). This form is available at http://www.spa.usace.army.mil/reg/Administrative%20Appeals/appeals_process.asp. If you elect to appeal this approved JD, you must complete Section II (Request For Appeal or Objections to an Initial Proffered Permit) of the form and return it to the Army Engineer Division, South Pacific, CESPD-PDS-O, Attn: Tom Cavanaugh, Administrative Appeal Review Officer, 1455 Market Street, Room 1760, San Francisco, CA 94103-1399 within 60 days of the date of this notice. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

If you have any questions concerning our regulatory program, please contact me at (575)-556-9939 or by e-mail at richard.h.gatewood@usace.army.mil. At your convenience, please complete and return the attached Customer Service Survey.

Sincerely,

Richard Gatewood
Regulatory Manager for
Southern New Mexico and West Texas

RAI 16

Provide additional information regarding ambient noise level monitoring results mentioned in the ER.

It is our understanding that IIFP is conducting noise level readings at the corners of the site to document existing conditions. The results of those measurements and survey report are needed in order to document the existing baseline noise at the site for the Affected Environment section of the EIS.

RESPONSE:

The baseline noise survey of the IIFP Site has not been conducted. The noise survey is being scheduled for the third quarter 2011.

Environmental Report Documentation Impact: None.

Official Responses to Environmental Report RAIs

RAI 17

Clarify the status and/or schedule of the various state permits mentioned in the ER, including a list of those determined to not be necessary.

IIFP is preparing applications and requesting permits as described in the schedule presented in Table 1-4, "Required Federal and State Permits", of the ER (IIFP, 2009a). An update of the permit status since submittal of the ER in December 2009 is necessary to ensure accurate information in the EIS. Because the ER describes some permits as potentially unnecessary, this updated information is needed to ensure that extraneous information is not included in the EIS.

Also provide a copy of the New Mexico Office of State Engineer Water Rights Permit for inclusion in the EIS. If the permit has not yet been received, provide a copy of the Water Rights Permit Application.

RESPONSE:

The existing Table 1-4 will be deleted and replaced with a new table showing the requirements for application and only those required for the IIFP Facility. The new table will be renumbered Table 1-3. The Air Construction Permit, the Air Operation Permit, and the NESHAPS Permit have been combined with the Air Quality: New Source Review/Authority to Construct Permit. The NPDES General Permit for Industrial Stormwater and the NPDES Construction Stormwater General Permits for both the federal and state agencies have been combined in the NPDES SWPPP/NOI Permit. The Hazardous Waste Permit, the EPA Waste Activity EPA ID Number, and the RCRA Operations Permits have been combined for the EPA Hazardous Waste ID Number. The Access Permit has been renamed "Highway Right-of-Way Permit." The "Drinking Water System Permit," the "Above Ground Storage Tank Registration," and the "Clean Water Act, Section 404" have been added to the new table. Also, a copy of the New Mexico Office of State Engineer Water Rights Agreement will be included in the Environmental Report, Appendix B as shown below in the Environmental Report Documentation Impact for Appendix B.

See also RAIs ER-14 and ER-20a.

Environmental Report Documentation Impact: Table 1-4, "Required Federal and State Permits," will be deleted and replaced with Table 1-3, "IIFP Required Federal and State Permits. (Former Table 1-3, Revision A has previously been deleted.)The 2nd paragraph of Section 1.5, "Building Permits and Licenses," will be revised to add the required permits with the revised Table 1-3. The 2nd paragraph and the table will read as follows:

A number of licenses and permits will be required for construction and operation of the IIFP ~~plant~~facility. Permits include the following:

- Air Quality: New Source Review/Authority to Construct) Permit,
- Ground Water Discharge Permit/Liquid Waste (sewage) Permit,
- EPA Hazardous Waste ID Number,
- Drinking Water System Permit
- Radiation Protection Permit,
- Above Ground Storage Tank Registration,
- NPDES Storm Water Pollution Prevention Plan (SWPPP)/Notice of Intent (NOI),
- State Access (Highway Right of Way) Permit,
- Clean Water Act, Section 404, and

- Rare, Threatened, and Endangered Species Survey Permit.

~~A summary~~ The status of licenses and permits that are currently known to be required ~~are~~ is listed in the Table 1-34. During the federal and State permitting process, any changes in requirements will be re-evaluated.

Table 1- 3 IIFP Required Federal and State Permits

Permit	Agency	Required for Application	Submittal Time Frame
NPDES SWPPP/NOI	EPA Region 6/NMED	Facility design layout, surface water flow diagram, best management practices, receiving waters determination, generate SWPPP, and produce and submit NPDES NOI.	2nd Qtr. 2011
Highway Right-of-Way	NMDOT	One month traffic study and right-of-way application.	2nd Qtr. 2011
Air Quality: New Source Review/Authority to Construct Permit	NMED/AQB	Equipment list for stacks, generators, boilers, etc. petroleum storage tanks, emission calculations, facility design layout, air dispersion modeling, and Public Notice	3rd Qtr. 2011
Ground Water Discharge Permit/Liquid Waste Permit	NMED/GWQB	Facility design; calculations for stormwater discharge rate, effluent discharge rate, and P.E. stamped water balance; effluent quality determination; effluent processing; treatment, storage, and disposal plans; baseline conditions; domestic waste land apply strategy; monitoring plan; contingency plan; and Public Notice	3rd Qtr. 2011
Drinking Water System Permit	NMED/DWB	Drinking water system design, monitoring plan, and operator certification	2nd Qtr. 2012
EPA Hazardous Waste ID Number	NMED/HWB	Determination of generator status (Large Quantity Generator, Small Quantity Generator, or Small Quantity Exempt)	3rd Qtr. 2012
Radiation Protection Permit	NMED/RCB	List and description of all radiological source equipment.	2nd Qtr. 2012
Above Ground Storage Tank Registration	NMED/PSTB	Petroleum storage tanks (size, design specifications, fuel type)	4th Qtr. 2012
Clean Water Act, Section 404	USACE	Site vegetation characterization and wetland determination to the USACE	Complete
Endangered Species Survey	NMDFG	This permit would be required for conducting surveys of the U.S BLM lands for Lesser-Prairie Chicken and Sand Dune Lizard.	Complete for Lizard 2nd Qtr. 2011
Right-of-Entry Permit	NMSLO	IIFP has obtained this permit for entry onto Section 26, 27, 34, or 35.	Complete
State Land Swap	NMSLO	This arrangement requires that an environmental	Complete

Permit	Agency	Required for Application	Submittal Time Frame
Arrangement		assessment and a cultural resources survey be conducted on lands offered for exchange..	
Class III Cultural Survey Permit	NMSHPO	IIFP has obtained this permit to conduct surveys on Section 26, 27, 34, or 35.	Complete

NPDES – National Pollutant Discharge Elimination System; EPA – U.S. Environmental Protection Agency; NESHAP – National Emissions Standards for Hazardous Air Pollutants; NMDOT – New Mexico Department of Transportation; NMED/AQB – New Mexico Environment Department /Air Quality Bureau; NMED/HWB – New Mexico Environment Department/Hazardous Waste Bureau; NMED/RCB – New Mexico Environment Department/Radiological Control Bureau; NMED/GWQB – New Mexico Environment Department/Ground Water Quality Bureau; NMDGF – New Mexico Department of Game and Fish; NMSLO – New Mexico State Land Office; NMSHPO – New Mexico State Historic Preservation Office, NMED/DWB - New Mexico Environment Department/Drinking Water Bureau, USACE - U.S. Army Corps of Engineers, NMED/PSTB - Petroleum Storage Tank Bureau, U.S. BLM – U.S. Bureau of Land Management

Environmental Report Documentation Impact: Verbiage has been added to ER Sections 3.12 (see also RAI ER-20a), Section 4.13.3.3, Liquid Wastes," and new Section 4.13.6, "Cumulative Impacts" as follows to clarify that liquid process wastes are not discharged from the IIFP production facilities.

3.12 Waste Management (revised 1st paragraph, split into two paragraphs)

Waste Management for the IIFP facility is divided into gaseous, liquids, and solid wastes. Liquid process wastes are not discharged from the IIFP production facilities as shown in Table 3-58. After tertiary treatment, sanitary water would be discharged to a tree farm. If needed after heavy rainfall events, stormwater would be discharged from the retention basins to the tree farm after the stormwater was analyzed and met all groundwater discharge limits. The types of wastes are tabulated in Table 3-58.

Descriptions of the generation, management, and disposal of various wastes from construction and operations are discussed in this section. Disposal plans, waste minimization, and environmental impacts are discussed in ER Section 4.13, "Waste Management Impacts."

4.13.3.~~3~~2 Liquid Wastes (formerly 4.13.3.2; revised 1st paragraph)

The facility does not discharge any process effluents to natural surface waters or grounds, and there is no tie into a Publicly Owned Treatment Works (POTW). No public impact is expected from routine liquid effluent discharge as no process liquids are discharged off site (process wastes are recycled). After tertiary treatment, sanitary water would be discharged to a tree farm. If needed after heavy rainfall events, stormwater would be discharged from the retention basins to the tree farm after the stormwater was analyzed and met all discharge limits.

4.13.6 Cumulative Impacts (1st paragraph)

Minimal liquid wastes are generated during the construction of the IIFP Facility. All process liquid wastes are recycled during the operation of the facility. After tertiary treatment, sanitary water would be discharged to a tree farm. If needed after heavy rainfall events, stormwater would be discharged from the retention basins to the tree farm after the stormwater was analyzed and met all discharge limits.

Environmental Report Documentation Impact: The Environmental Report, Appendix B will be revise to include a copy of the New Mexico Office of State Engineer Water Rights Agreement as shown below:

STATE OF NEW MEXICO
COUNTY OF LEA
RESOLUTION NO. 10-DEC-043R

CONTRACT WITH NEW MEXICO STATE LAND OFFICE FOR WATER USE AGREEMENT

WHEREAS, pursuant to Section 4-38-1 NMSA 1978 Comp., the Board of County Commissioners of Lea County has the power to exercise the powers granted the County as a political subdivision of the State of New Mexico, and,

WHEREAS, pursuant to Section 4-38-1 NMSA 1978 Comp., the Board of County Commissioners of Lea County has the power to purchase real and personal property, including water rights and uses, as they deem necessary in the exercise of their authority, and

WHEREAS, the board has determined that it is in the best interest of the County to execute a New Mexico State Land Office Water Use Agreement relating to SEO file No. L-4719-A, a copy of which is attached hereto as Exhibit "A" and is incorporated herein by reference ("Agreement" hereinafter) for future economic development in accordance with the Local Economic Development Act and the Lea County Local Economic Development Ordinance, and

WHEREAS, pursuant to New Mexico law and the regulations of the New Mexico State Land Office, the Board has applied to receive this proposed Agreement, and

WHEREAS, the Commissioner of Public Lands has agreed to enter into such Agreement with the County,

THEREFORE BE IT RESOLVED, that the entering into the Agreement is hereby approved.

IT IS FURTHER RESOLVED, that Gregory H. Fulfer, Chairman of the Board of County Commissioners, is authorized to approve, execute all documents, pay all fees, and take such action as is necessary to finalize and accomplish the entering into the Agreement with the New Mexico State Land Office.

PASSED, APPROVED AND ADOPTED in open meeting this 9th day of December, 2010.

LEA COUNTY BOARD OF COUNTY COMMISSIONERS

Gregory H. Fulfer, Chairman

Michael Whitehead, Vice Chairman

Dale Dunlap, Member

Ron Black, Member

Hector Ramirez, Member

ATTEST: Pat Chappelle
Lea County Clerk

Angie Benge, Deputy

APPROVED AS TO FORM AND LEGAL SUFFICIENCY:

Gary Don Reagan
Interim Lea County Attorney

Resolution No. 10-DEC-043R
LCBC Meeting 12-09-2010
Page 1 of 2

Exhibit "A"

Subject Land

Commissioner of Public Lands
NEW MEXICO STATE LAND OFFICE
WATER USE AGREEMENT No. _____

Grantor: New Mexico Commissioner of Public Lands
Grantee: Lea County
Effective Date:
Expiration Date:
Date:

This Agreement for the use of water is made between the New Mexico Commissioner of Public Lands, acting trustee pursuant to the Act of June 21, 1910. 36 Stat. 557, ch. 310, § 10 (Grantor) and Lea County, (Grantee) whose address for purposes of notice is _____.
The effective date of this Agreement shall be the date upon which it is executed by the Grantor.

a. declarations The parties understand and acknowledge that in his capacity as trustee of the state lands managed by the him, Grantor is the owner of the right to use the quantity of water which is the subject of this Agreement (use-right), that nothing in this Agreement shall be construed to convey anything to Grantee other than a portion of such use-right, and that title to the water rights being used shall at all times during the term of this Agreement remain in Southwest Public Service Company.

b. grant of use-rights Grantor hereby grants to Grantee, for consideration, the right to use fifty (50) acre- feet per annum of water to be taken from L-4719-A or permitted supplemental wells within the same section:

Subdivision	Section	Township	Range	Acreage	Diversion	Priority	SEO file No.
	35	19S	36E		50 AF/ann.	9-15-61	L-4719-A

Subject to the terms of this Agreement, Grantee may change said point of diversion.

c. consideration for use-rights Grantee shall pay in advance to Grantor the non-refundable annual base amount of $500.00 per annum, to be due in full on or before the effective date of this agreement, and thereafter on or before the anniversary of that date. Said base amount shall increase at the rate of 2.5% to be calculated as follows: (current base amount) X 1.025 = subsequent base amount. In addition, Grantee shall pay quarterly in arrears to the Commissioner a surcharge equal to $0.10 per thousand gallons taken from the well. Said base amount and surcharge shall escalate at the rate of $0.02 quinquennially (see Exhibit A). Payments of the surcharge shall be submitted along with an accounting of the amount of water taken. Grantee must maintain a totalizing meter for purposes of calculating said quarterly surcharge; and surcharge payments shall be submitted with a report of the readings from such totalizing meter. Any costs or fees incurred for transportation or treatment of said water, for drilling or re-drilling any supplemental wells, for installation or maintenance of any meter or other infrastructure, or otherwise to employ the use-rights granted herein, shall be borne solely by Grantee.

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Official Responses to Environmental Report RAIs

Resolution No. 10-DEC-043R

LCBC Meeting 12-09-2010

l. commercial sale of water. In addition Grantee shall pay 20 % of all gross revenues received from the lease or sale of water to third parties. Gross revenues shall be paid and reported quarterly to Grantor at the time surcharges are paid. As used herein, "Gross Revenues" means the aggregate total revenue actually received by Grantee during quarter from the lease or sale of water, provided that Gross Revenues shall not include revenues derived from (a) any amounts received as settlement, judgment amounts, liquidated damages, or similar payments based on a claim of breach of contract, unless such income is intended as damage for lost revenues, or, (b) sales of water for which payment is not received, including because of a default by the purchaser thereof (except that Lessee shall promptly pay Lessor when and if it ultimately receives such payment). As used herein, the "lease or sale of water to third parties" means the disposition of water to any third party or entity. "Pumping Costs" shall mean Actual out-of-pocket annual expenses involved in the pumping of the subject water, and will not include any deductions for intangible amounts such as depreciation. Grantee shall provide Grantor an itemized statement of "pumping costs" each year; and during the first three years the parties will negotiate Grantee's methodology for calculating pumping costs. If the parties fail to agree on pumping cost methodology, the parties will resolve this through binding arbitration with the arbitrator to be mutually selected by the parties and paid for by Grantee.

d. term of Agreement The term of this Agreement shall be for forty (40) years from the effective date.

e. permitted uses The water shall be beneficially used only for the following purpose(s), subject to any restrictions upon use which the New Mexico State Engineer may impose: for lease, sale or other disposition, to such entity or entities as Grantor and Grantee may agree upon, on Section 27 Township 18 South Range 36 East. Grantee will inform Grantor in writing of any such restrictions imposed by the State Engineer immediately upon approval of Grantee's application.

f. applications and permits Grantee shall, in conformity with NMSA 1978 72-6-1 *et seq.* be solely responsible for making all applications, paying all fees and related costs, and obtaining all permits necessary from the New Mexico State Engineer's Office, and for making any and all reports as may be required by the State Engineer. Subject to the approval of the Commissioner, Grantee may list Grantor as a co-applicant with the understanding that Grantor is prohibited from expending any sums in support of such application. Grantee's rights under this Agreement are contingent upon the approval of the State Engineer. Grantee shall immediately notify Grantor if and when the State Engineer approves Grantee's application. If Grantee's application is rejected by the State Engineer, and Grantee fails to prosecute a successful appeal of that determination, then this Agreement shall, upon Grantee's written notice of such, expire.

g. liens and encumbrances Grantee shall in no way permit any lien or encumbrance to attach to or burden the subject use-right, and Grantee will indemnify Grantor for all damages, costs, and fees arising out of or in connection with any lien or encumbrance which may attach to or burden said use-right during the term of this Agreement.

h. prohibition against assignment Grantee will in no way sublease, assign, or otherwise convey to any third party any interest in all or part of the subject use-right without Grantor's express, written consent, and Grantee will indemnify Grantor for all damages, costs, and fees arising out of or in connection with any act by or attempt of Grantee to sublease, assign, or otherwise dispose of any interest in the subject use-right. Any sublease, assignment or other disposition of any interest in the subject use-right without Grantor's express written consent, shall be void.

i. improvements; rights-of-way Grantee acknowledges the need to obtain Grantor's consent, by way of a standard lease or grant of right-of-way or other easement, for any roadways, wells, pipes, pumps, or other items of equipment installed by Grantee on State Land Office trust lands by Grantee in connection with this Agreement or otherwise.

j. holding over If this Agreement terminates or is cancelled and Grantee continues using the subject use-rights without Grantor's consent, such use shall be deemed a trespass and a conversion, giving rise to such

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remedies at law or in equity as Grantor may then have. However, Grantor may elect to consider such continued use a holding over for which Grantee shall owe a monthly rental at the rate of 125% of the consideration amounts stated above.

k. abandonment Grantee's non-use of the use-rights granted herein for a period of 180 days without Grantor's consent shall be deemed an abandonment, and said use-rights shall then *ipso facto* revert to Grantor. Grantor's failure to discover such non-use shall not waive the abandonment, and any subsequent use shall not re-instate such use-rights.

l. default If Grantee defaults in the performance of any of the terms of this Agreement, including the obligation to timely pay the above consideration, Grantor shall give Grantee written notice of such default with 30 days to remedy that default. If Grantee fails to satisfactorily remedy the default within that 30-day period, this Agreement shall automatically terminate without further act or notice required of Grantor, and the use-rights shall *ipso facto* revert to Grantor. Such automatic cancellation shall be in addition to any other remedies at law or in equity which Grantor may have for Grantee's default. Grantee shall be liable for all costs and fees incurred by Grantor in seeking enforcement of this Agreement or in seeking damages for Grantee's default.

m. relinquishment Grantee may relinquish this Agreement upon 30-days written notice to Grantor at any time provided Grantee is then current on all payments due Grantor and is in full compliance with all terms of this Agreement. No refund of rental or other consideration paid shall be due to Grantee upon such relinquishment. Any such relinquishment shall be made upon written application to Grantor accompanied by such relinquishment fee as is then established by the Commissioner.

n. compliance with laws Grantee shall fully comply with all laws, whether statutory or court-made, regulations, rules, ordinances and requirements, including but not limited to, all current NMSLO Rules and Regulations and those that may be hereafter promulgated. Governmental agencies promulgating such laws, regulations, rules, ordinances and requirements shall not be deemed third party beneficiaries under this Agreement. Grantee's compliance shall be at its own expense and shall not be considered an offset to the rent or other consideration due under this Agreement.

o. hold harmless Grantee shall be solely liable for any liability that may arise due to Grantee's acts or omissions under or in connection with this Agreement, and Grantee shall save and hold harmless the State of New Mexico, Grantor and Grantor's employees, agents and contractors, in both their official and individual capacities, from any and all liabilities, claims, losses, damages, or expenses, including but not limited to reasonable attorneys' fees, third party claims, costs or penalties for removal, remedial or restoration arising out of, alleged to arise out of, or indirectly connected with Grantee's use of Grantor's water rights.

p. miscellaneous

1. This Agreement incorporates all the agreements, covenants and understandings between Grantor and Grantee, and all such agreements, covenants and understandings are merged into this written Agreement. No prior agreement or understanding between Grantor and Grantee shall be valid or enforceable unless expressly embodied in this Agreement.

2. This Agreement shall not be altered, changed or amended except by an instrument executed by both Grantor and Grantee.

3. In the event Lessee is aggrieved by any decision of Grantor relating to this Agreement including any decision to terminate this Agreement, Grantee shall timely file an administrative contest pursuant to NMSA 1978, § 19-7-64 and Land Office Rule 15 (19.2.15 NMAC). Grantee shall initiate no court action regarding this Agreement except to appeal a final decision of the Commissioner of Public Lands rendered pursuant to such a contest proceeding, and as provided by NMSA 1978, § 19-7-67.

3. This Agreement shall be governed by the laws of the State of New Mexico, without giving effect to the conflict of law provisions of the State of New Mexico. Any disputes arising under or in connection with this Agreement must be resolved pursuant to administrative contest under Land Office Rule 15 (19.2.15 NMAC). For purposes of appeals therefrom Grantee consents to venue and jurisdiction in the First Judicial District Court of County of Santa Fe, New Mexico, and to service of process under the

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remedies at law or in equity as Grantor may then have. However, Grantor may elect to consider such continued use a holding over for which Grantee shall owe a monthly rental at the rate of 125% of the consideration amounts stated above.

k. abandonment Grantee's non-use of the use-rights granted herein for a period of 180 days without Grantor's consent shall be deemed an abandonment, and said use-rights shall then *ipso facto* revert to Grantor. Grantor's failure to discover such non-use shall not waive the abandonment, and any subsequent use shall not re-instate such use-rights.

l. default If Grantee defaults in the performance of any of the terms of this Agreement, including the obligation to timely pay the above consideration, Grantor shall give Grantee written notice of such default with 30 days to remedy that default. If Grantee fails to satisfactorily remedy the default within that 30-day period, this Agreement shall automatically terminate without further act or notice required of Grantor, and the use-rights shall *ipso facto* revert to Grantor. Such automatic cancellation shall be in addition to any other remedies at law or in equity which Grantor may have for Grantee's default. Grantee shall be liable for all costs and fees incurred by Grantor in seeking enforcement of this Agreement or in seeking damages for Grantee's default.

m. relinquishment Grantee may relinquish this Agreement upon 30-days written notice to Grantor at any time provided Grantee is then current on all payments due Grantor and is in full compliance with all terms of this Agreement. No refund of rental or other consideration paid shall be due to Grantee upon such relinquishment. Any such relinquishment shall be made upon written application to Grantor accompanied by such relinquishment fee as is then established by the Commissioner.

n. compliance with laws Grantee shall fully comply with all laws, whether statutory or court-made, regulations, rules, ordinances and requirements, including but not limited to, all current NMSLO Rules and Regulations and those that may be hereafter promulgated. Governmental agencies promulgating such laws, regulations, rules, ordinances and requirements shall not be deemed third party beneficiaries under this Agreement. Grantee's compliance shall be at its own expense and shall not be considered an offset to the rent or other consideration due under this Agreement.

o. hold harmless Grantee shall be solely liable for any liability that may arise due to Grantee's acts or omissions under or in connection with this Agreement, and Grantee shall save and hold harmless the State of New Mexico, Grantor and Grantor's employees, agents and contractors, in both their official and individual capacities, from any and all liabilities, claims, losses, damages, or expenses, including but not limited to reasonable attorneys' fees, third party claims, costs or penalties for removal, remedial or restoration arising out of, alleged to arise out of, or indirectly connected with Grantee's use of Grantor's water rights.

p. miscellaneous

1. This Agreement incorporates all the agreements, covenants and understandings between Grantor and Grantee, and all such agreements, covenants and understandings are merged into this written Agreement. No prior agreement or understanding between Grantor and Grantee shall be valid or enforceable unless expressly embodied in this Agreement.

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3. In the event Lessee is aggrieved by any decision of Grantor relating to this Agreement including any decision to terminate this Agreement, Grantee shall timely file an administrative contest pursuant to NMSA 1978, § 19-7-64 and Land Office Rule 15 (19.2.15 NMAC). Grantee shall initiate no court action regarding this Agreement except to appeal a final decision of the Commissioner of Public Lands rendered pursuant to such a contest proceeding, and as provided by NMSA 1978, § 19-7-67.

3. This Agreement shall be governed by the laws of the State of New Mexico, without giving effect to the conflict of law provisions of the State of New Mexico. Any disputes arising under or in connection with this Agreement must be resolved pursuant to administrative contest under Land Office Rule 15 (19.2.15 NMAC). For purposes of appeals therefrom Grantee consents to venue and jurisdiction in the First Judicial District Court of County of Santa Fe, New Mexico, and to service of process under the

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laws of the State of New Mexico in any action relating to this Agreement or its subject matter.

4. All terms, conditions, and covenants of this Agreement, and all amendments shall extend to and bind the heirs, successors, and assigns of Grantee and Grantor.

5. Time is of the essence in the performance of this Agreement. Grantee's failure to perform any or all of its obligations under this Agreement in a timely manner shall be grounds for Grantor to cancel this Agreement.

6. In the event that any provision of this Agreement is held invalid or unenforceable under applicable law, the Agreement shall be deemed not to include that provision and all other provisions shall remain in full force and effect.

GRANTEE Lea County

By: Gregg Fowler date: 12-9-10

address for purposes of notice:

approved by State Land Office counsel:

date:

DATED:

S
E
A
L

PATRICK H. LYONS
COMMISSIONER OF PUBLIC LANDS

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EXHIBIT A

Year	rate per thousand gallons
1-5	10¢
6-10	12¢
11-20	14¢
21-25	16¢
26-30	18¢
31-35	20¢
36-40	24¢

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Official Responses to Environmental Report RAIs

RAI 18

Provide status of the radiological monitoring plan described in the "Radiological Monitoring" Section 6.1 of the ER.

Provide any updates which have been implemented to the facilities radiological monitoring requirements as a result of discussions with State and local officials. This information is necessary to address public comments in the EIS.

RESPONSE:

No updates have been implemented to the facilities radiological monitoring requirements as a result of discussions with State and local officials. However, soil and vegetation samples have been taken and analyzed as part of the pre-operational baseline. The 2010 Characterization Report completed by GL Environmental, Inc. (GLEI, 2010e) is attached. Results of the baseline characterization will be included in the appropriate sections of the Environmental Report, Chapter 6.

Environmental Report Documentation Impact: Two new paragraphs and Figure 6-2 will be added after the 7th paragraph of Section 6.1.2.1, "Sampling Program," of the Environmental Report to present the radiological results from the baseline soil and vegetation sampling. The new paragraphs will read as follows:

On October 15, 2010, two soil and two vegetation samples were collected and shipped to analytical laboratories for analysis (GLEI, 2010e). Soil and vegetation sampling location 1 was on the IIFP "controlled area". Soil and vegetation sampling location 2 was in the "owner-controlled area," downwind and north of the proposed "controlled area." See Figure 6-2 for locations of those samples. The predominant wind direction was determined using wind rose data shown in Figure 3-57. Radiological analysis for gamma spectroscopy was performed by contract analytical laboratory. Gamma spectroscopy included isotopes of uranium, actinium, bismuth, cobalt, cesium, potassium, protactinium, lead, thorium, and thallium. The contract analytical laboratory holds National Environmental Laboratory Accreditation Program (NELAP)-recognized certifications in numerous states, DOE Consolidated Audit Program (DOECAP) approval, USACE approval, U.S. Department of Agriculture (USDOA) approval, and Department of Defense through the US Army. These certifications satisfy the IIFP ER quality control requirements in section 6.1.2.2 for contract analytical laboratories.

Results for soil analysis had U-234 values ranging from 4.42E-07 to 5.95E-07 µCi/g. U-235/236 ranged from 5.58E-09 to 2.60E-08 µCi/g. U-238 results ranged from 5.86E-07 to 5.95E-07 µCi/g. Results from vegetation tissue samples for isotopic uranium results for sampling location 1 were all less than minimum detectable concentrations (MDC). Sampling location 2 had a positive result of 1.04E-08µCi/g for U-238. All other isotopic uranium results were less than MDC (GLEI, 2010e).

Environmental Report Documentation Impact: The 2nd paragraph of Section 6.2.3, "Effluent Monitoring," of the Environmental Report will be revised to present the chemical analyses of the baseline sampling conduction in October 2010. The 2nd paragraph of Section 6.2.3 will read as follows:

Parameters for continuing environmental performance will be developed from the baseline data collected during preoperational sampling. On October 15, 2010, two soil and two vegetation samples were collected and shipped to analytical laboratories for analysis. See Figure 6-2 for locations of those samples.

RCRA metal concentrations in the soil samples for barium ranged from 88.5 to 109 mg/kg, cadmium from 0.27 to 0.42 mg/kg, chromium from 10.0 to 12.2 mg/kg, and lead from 11.7 to 14.7 mg/kg. All other

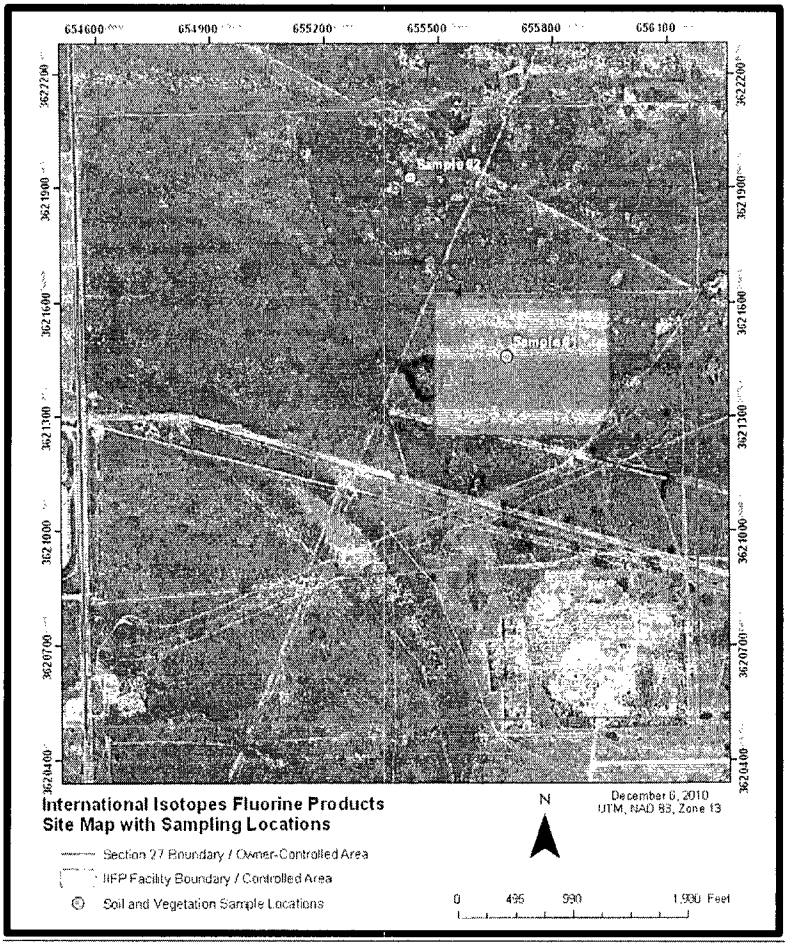

Figure 6- 2 Site Map with Sampling Locations

RCRA metals were less than laboratory minimum detectable levels (MDL). There were no positive results for organics in soil samples taken on October 15, 2010. For vegetation samples, barium results ranged from 10.6 to 10.9 mg/kg, and all other RCRA metal results were less than MDL values. Laboratory analysis indicated trace amounts of benzoic acid, phenol, and bis(2-ethylhexyl) phthalate in soil samples. Benzoic acid was present in sampling locations 1 and 2 at 0.48 and 0.46 mg/kg, respectively. Bis(2-ethylhexyl) phthalate was found in vegetation sample1 at 0.26 mg/kg, and in sample 2 at 0.19 mg/kg. Phenol was found in sample location 1 at a concentration of 0.40 mg/kg (GLEI, 2010e).
Operational monitoring surveys will also be conducted using sampling sites and at frequencies established from baseline sampling data and as determined based on requirements. Operational monitoring surveys are determined based on requirements contained in EPA Region 6 NPDES General Discharge Permits as well as the NMED/GWQB Ground Wwater Discharge Permit/Plan.

Official Responses to Environmental Report RAIs

RAI 19

Provide full citations of references listed in the "Ecological Resources" Section 3.5 of the ER but not identified in the "List of References" Chapter 9 of the ER.

The following references are called in Section 3.5, "Ecological Resources", but not cited in Section 9, "List of References", of the ER (IIFP, 2009a): Painter (2004), CBD (2002), CBD (2009), and USFWS (2008). Therefore, provide either the reference itself or the complete citation for these references. If any references in Section 3.5 are extraneous and not needed, then please indicate this fact.

RESPONSE:

A review of the references, particularly in Section 3.5 has been completed, and several references will be added to Chapter 9, "List of References".

Environmental Report Documentation Impact: Chapter 9 will be revised to add references indicated above as well as references added as a result of these responses to the RAIs. The following references will be added with the rationale for the addition of the reference:

ATTRA, 2007. ATTRA – National Sustainable Agriculture Information Service, Publication #IP310, "Conserving Fuel on the Farm, National Center for Appropriate Technology, Butte, MT, 2007. (Added as a response to RAI 8-c revising Section 4.6.1, "Air Quality Impacts from Construction.")

BDD, 2010. Buckman Direct Diversion Project, "Protecting Endangered Species, New Mexico Burrowing Owl," Santa Fe, NM, 2010. (Added to show the source for Figure 3-48.)

~~BEA, 1997. Bureau of Economic Analysis Regional, "A User Handbook for the Regional Input-Output Modeling Systems (RIMS II)," U.S. Department of Commerce, Washington, D.C., 1997.~~ (Reference not used in Environmental Report.)

CBD, 2002. Center for Biological Diversity, "Petition to List the Sand Dune Lizard *Sceloporus arenicolus* as a Threatened or Endangered Species under the U.S. Endangered Species Act," New Mexico, May 2002. (Added as a response to this RAI and added to show the source of Figure 3-39.)

CBD, 2009. Center for Biological Diversity, "Endangered Species Act Works, Arctic Peregrine Falcon," New Mexico, May 2009. (Added as a response to this RAI.)

CCI, 2006. Center for Conservation Incentives, "Aldo Leopold's Land Ethic Inspires An Incentives-Based Conservation Partnership," New York, 2006. (Added to show the source of Figure 3-41.)

Envirocare, 2003. Envirocare of Utah, "Envirocare of Utah: Expanding Waste Acceptance Criteria to provide Low-Level and Mixed Waste Disposal Options'" Utah State University, St. Lake City, Utah, February 2003. (Added as a response to new Section 4.13.3.2, "Environmental Impacts of Off-site Disposal of Depleted Uranium Oxide in a Licensed Disposal Facility." See Environmental Report Documentation Impact for RAI 2-b.)

EPA, 2002. U.S. Environmental Protection Agency, Emissions by Category Report – Criteria Air Pollutants, Lea County, New Mexico for Volatile Organic Compounds for 2002.

http://www/epa/gov/air/data/geosel.html. (Added as a response to RAI 8-c revising Section 4.6.1, "Air Quality Impacts from Construction.")

EPA. 2010. EPA-420-R-10-018. NR-009d. Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition. July. Available online at http://www.epa.gov/oms/models/nonrdmdl/nonrdmdl2010/420r10018.pdf (Added as a response to RAI 8-a revising Section 4.6.1, "Air Quality Impacts from Construction.")

GAO, 2004. U.S. General Accounting Office, Report to the Chairman, Committee on Energy and Natural Resources, U.S. Senate, Low-Level Radioactive Waste, Disposal Availability Adequate in the Short Term, but Oversight Needed to Identify Any Future Shortfalls (GAO-04-604), Washington, D.C. June 2004. (Added as a response to new Section 4.13.3.2, "Environmental Impacts of Off-site Disposal of Depleted Uranium Oxide in a Licensed Disposal Facility." See Environmental Report Documentation Impact for RAI 2-b.)

GLEI, 2010a. GL Environmental, Inc., "2010 Vegetation Survey Report," Las Vegas, NM, November 29, 2010. (Added as a response to ER RAI 14 revising Sections 3.5.3, "Major Vegetation Characteristics' and Section 3.5.4, "Habitat Importance.")

GLEI, 2010b. GL Environmental, Inc., "Status and Habitat of the Dunes Sagebrush Lizard at the Proposed Site for the International Isotopes Fluorine Products Facility in Lea County, New Mexico," Las Vegas, NM, November 29, 2010. (Added as a response to ER RAI 14 revising Section 3.5.7.2, Habitat subsection.

GLEI, 2010c. GL Environmental, Inc., Letter to Department of the Army, Albuquerque District Corp of Engineers, "RE: Waters of the U.S. Determination," Las Vegas, NM, November 29, 2010. (Added as a response to ER RAI 15 revising Sections 3.1.1, "Land Use Status" and Section 3.4.9, "Description of Wetlands.")

GLEI, 2010d. GL Environmental, Inc., "Existing Groundwater Conditions in Section 27, Range 18 South, Township 36 East," Las Vegas, NM, December 8, 2010. (Added as a response to RAI 11 revising Section 3.4.15.7, "Historical and Current Data from Site Wells.")

GLEI, 2010e. GL Environmental, Inc., "2010 Soil and Vegetation Characterization Report," Las Vegas, NM, December 8, 2010. (Added as a response to ER RAI_18 revising Sections 6.1.2.1, "Sampling Program" and Section 6.2.3, "Effluent Monitoring.")

National Geographic, 2010. National Geographic, "Peregrine Falcon *Falco peregrines*," Washington, D.C. 2010. (Added to show the source of Figure 3-44.)

NMED, 2011. New Mexico Environment Department, Ground Water Quality Bureau, Letter from Clint Marshall, "Preliminary Description of Monitoring Requirements for the Proposed International Isotopes Uranium De-Conversion Facility near Hobbs, New Mexico," Santa Fe, New Mexico, February 9, 2011. (Added as a result of ER RAI 11 from revised Section 3.4.15.7.)

Painter, 2004. Charles W. Painter, "Conservation of the Sand Dune Lizard in New Mexico, Recommendations Based on the Management Plan for the Sand Dune Lizard," New Mexico Department of Game and Fish, New Mexico, February 2004. (Added as a response to this RAI.)

RMBO, 2010. Rocky Mountain Bird Observatory, "Conserving Birds and their Habitats," Brighton, Colorado, 2010. (Added to show the source of Figure 3-45.)

SBAP, 2010. Small Business Assistance Program, Colorado Department of Public Health and Environment, "A Guide to Air Regulations for Gasoline and Diesel Fuel Dispensing Stations," Denver, Colorado, 2010. (Added as a response to RAI 8-c revising Section 4.6.1, "Air Quality Impacts from Construction.")

USACE, 2011. U.S. Army Corps of Engineers, Letter to G.L. Environmental, Inc., Subject: Action No. SPA-2011-00030-LCO, International Isotopes Fluorine Products Facility, January 26, 2011. (Added as a response to RAI 15 revising Section 3.4.9, "Description of Wetlands" and added letter to Appendix B, "Consultation Letters.)

USFWS, 2008 reference (Cited in this RAI) from Section 3.5.7.5, "American Peregrine Falcon," revised to show the reference as USFWS, 2006.

RAI 20

Provide additional information on construction wastes and operations wastes.

a. *Provide estimated quantities for construction wastes separately for Phase 1 and Phase 2. Section 3.12.2.1, "Construction Wastes," of the ER (IIFP, 2009a) provides a non-quantitative description of construction wastes. Include in the estimates the annual waste generation for each waste type and the total amount of construction waste by type for each phase. Section 4.2.4.2, "Construction," of the ER (IIFP, 2009a) provides an estimate for the number of roundtrips due to construction materials deliveries and waste shipments. This implies that detailed estimates for waste generation are available.*

Additional detailed information on waste volumes, as described above, is necessary to fully evaluate potential environmental impacts associated with waste generation and disposal. Also, clarification is necessary in Table 3-55, as described above, because for the upper range limit of RCRA waste quantities, the Table shows more waste for Phase 1 than for "Total for Phase 1 and Phase 2."

RESPONSE:

Construction wastes have been estimated for Phase 1 and Phase 2. The quantities of each type of wastes expected to be generated at the IIFP Facility during each phase of operations will be added to the Environmental Report.

Environmental Report Documentation Impact: Section 3.12 will be revised to refer to a listing of the type of waste generated during Phase 1 and Phase 2. A new Table 3-58 "Listing of Waste Streams from the Operation of the IIFP Facility" with the new data will be added. Table 3-55, "Estimated Annual Quantities of Waste Generated at the IIFP Facility," from Section 3.12.2, "Solid Waste Management," will be deleted and replaced with a table having a more detailed listing of wastes. The table will also be renumbered Table 3-59.

3.12 Waste Management

Waste Management for the IIFP facility is divided into gaseous, liquids and solid wastes. Liquid process wastes are not discharged from the IIFP production facilities as shown in Table 3-58. After tertiary treatment, sanitary water would be discharged to a tree farm. If needed after heavy rainfall events, stormwater would be discharged from the retention basins to the tree farm after the stormwater was analyzed and met all groundwater discharge limits. The types of wastes are tabulated in Table 3-58. Descriptions of the generation, management, and disposal of various wastes from construction and operations are discussed in this section. Disposal plans, waste minimization, and environmental impacts are discussed in ER Section 4.13, "Waste Management Impacts."

Table 3- 58 Listing of Waste Streams from the Operation of the IIFP Facility

Phase 1	Phase 2
Air Emissions	
Process Scrubber Stack	Process Scrubber Stack
UF_4 Dust Collector Stack	UF_4 Dust Collector Stack
UF_4Transfer Dust Collector Stack	UF_4Transfer Dust Collector Stack
Boiler Stack	Boiler Stack
Diesel Generator/Fire Pump Stack	Diesel Generator/Fire Pump Stack
FEP Oxide Dust Collector Stack	FEP Oxide Dust Collector Stack
Lime Unloading Dust Collector Stack	Lime Unloading Dust Collector Stack
B_2O_3 Unloading Dust Collector Stack	B_2O_3 Unloading Dust Collector Stack
	Future Oxide Dust Collector Stack
CaF_2 Dust Collector Stack	CaF_2 Dust Collector Stack
CaF_2 Dryer Combustion Stack	CaF_2 Dryer Combustion Stack
Laboratory Hood Stack	Laboratory Hood Stack
Evaporator Stack	Evaporator Stack
Hydrogen Generator Vent Stack	Hydrogen Generator Vent Stack
Decon Dust Collector Stack	Decon Dust Collector Stack
Building Air Vents	Building Air Vents
Solid Waste	
Carbon	Carbon
Carbon Filters	Carbon Filters
Coke	Coke
Drums	Drums
Ion Exchange Resin-Softeners	Ion Exchange Resin-Softeners
Dust Collector Bags	Dust Collector Bags
UF_4 Clinkers	UF_4 Clinkers
Oil Sorb, Dirt	Oil Sorb, Dirt
Oxide and Drums	Oxide and Drums
Radioactive Waste Trash	Radioactive Waste Trash
Sintered Tubes	Sintered Tubes
Wood Trash	Wood Trash
Aerosol Cans/Paint Cans/Bulbs	Aerosol Cans/Paint Cans/Bulbs
Molecular Sieve	Molecular Sieve
Municipal Trash Waste	Municipal Trash Waste
Safety Gear	Safety Gear
Waste Glass	Waste Glass
Calcium Fluoride	Calcium Fluoride
Oily Rags, Solvents	Oily Rags, Solvents
Activated Alumina And NaF	Activated Alumina And NaF
Lab Chemical Waste	Lab Chemical Waste
Sanitary Waste Biomass	Sanitary Waste Biomass
Maintenance Trash	Maintenance Trash
Food Waste	Food Waste
Trash Metal	Trash Metal
Ion Exchange Resin-Decon	Ion Exchange Resin-Decon
Medical Waste	Medical Waste
HEPA Filters	HEPA Filters
Grit Blast Material	Grit Blast Material

Phase 1	Phase 2
Potential Liquid Waste	
Boiler Blow-down/Not Discharged	Boiler Blow-down/Not Discharged
Softener Resin Back Flush/Not Discharged	Softener Resin Back Flush/Not Discharged
Laundry Waste/Not Discharged	Laundry Waste/Not Discharged
Lab Liquids/Not Discharged	Lab Liquids/Not Discharged
Decon Shower/Not Discharged	Decon Shower/Not Discharged
Stormwater/ Discharged if Needed after Analysis to Tree Farm	Stormwater/ Discharged if Needed after Analysis to Tree Farm
Sanitary Water/Tertiary Treated/Sent To Tree Farm	Sanitary Water/Tertiary Treated/Sent To Tree Farm

Table 3-59 Estimated Annual Quantities of Waste Generated at the IIFP Facility

Material	Type	Phase 1		Phase 2	
		Construction Waste (lb)	Operations (lb)	Construction Waste (lb)	Integrated Operations (lb)
Adhesives, Resins, Caulking Residues	RCRA	100-200		120-240	
Aerosol Cans/Paint Cans/Bulbs	RCRA		1,000-3,000		2,000-4,000
Calcium Fluoride*	RCRA		200,000-300,000		60,000-90,000
Lab Chemicals	RCRA		200-400		200-400
Lead (Batteries)	RCRA	100-250		100-250	
Oil Filters	RCRA	100-200		100-200	
Oil Sorb (Dirt Removal)	RCRA		2,000-5,000		3,000-7,000
Paint, Thinners, Solvents, Organic Residues	RCRA	100-500		100-500	
Pesticides	RCRA	100-150		100-150	
Petroleum Products, Oils, Lubricants Residues	RCRA	100-500		100-500	
Total RCRA Waste	RCRA	600-1,800	203,200-308,400	620-1,840	65,200-101,400
Activated Alumina	LLW		2,000-4,000		2,000-4,000
Air Ventilation Filters	LLW		50-100		65-100
Carbon	LLW		25,000-30,000		25,000-35,000
DUF_4 Clinkers	LLW		5,000-10,000		5,000-10,000
Coke	LLW		8,000-12,000		8,000-12,000

Material	Type	Phase 1		Phase 2	
		Construction Waste (lb)	Operations (lb)	Construction Waste (lb)	Integrated Operations (lb)
Crushed Drums	LLW		1,000-3,000		2,000-8,000
Dust Collector Bags	LLW		500-3,000		1,000-3,000
Ion Exchange Resin	LLW		1,000-2,000		2,000-4,000
Oxide for Burial plus Drums	LLW		2,800,000-6,200,000		8,700,000-20,000,000
Radioactive Waste Trash	LLW		35,000-55,000		70,000-100,000
Scrap Metal	LLW	4,000-6,000	4,000-8,000	4,000-6,000	12,000-16,000
Sintered Metal Tubes	LLW		1,000-2,000		2,000-3,000
Sodium Fluoride	LLW		2,000-4,000		2,000-4,000
Spent Blasting Sand	LLW	100	100-200	100	100-200
Wood Trash (Pallets)	LLW	1,000-1,500	1,000-4,000	1,000-1,500	3,000-12,000
Total LLW	LLW	5,100-7,600	2,885,650-6,337,300-	5,100-7,600	8,834,165-20,211,300
Air Filters-Vehicles	SW	50-100		50-100	
Cardboard/Packing	SW	300-500		300-500	
Clothing	SW		100-200		150-300
Fiber Drums	SW	300-500		300-700	
Molecular Sieve	SW		300-500		300-500
Municipal Trash Waste (Misc. and Sanitary)	SW		60,000-90,000		72,000-108,000
Safety Gear	SW		200-400		400-800
Waste Glass	SW		50-200		75-300
Total Other Solid Wastes	SW	650-1,100	60,650-91,300	650-1,300	72,925-109,900
Total Solid Waste	RCRA, LLW, SW	6,350-10,500	3,149,500-6,737,000	6,370-10,740	8,972,290-20,422,600

*Less CaF_2 is generated from the operations in Phase 2 than in Phase 1.

RAI 20

Provide additional information on construction wastes and operations wastes.

b. Clarify the total Phase 1 and Phase 2 column entry for Resource Conservation and Recovery Act (RCRA) operation waste in Table 3-55, "Estimated Annual Quantities of Waste Generated at the IIFP Facility," of the ER (IIFP, 2009a). The range of RCRA waste reported for both phases is 45,500 lb to 174,000 lb, which is less than the range reported for Phase 1 which is 32,300 lb to 361,500 lb. Please clarify.

Additional detailed information on waste volumes, as described above, is necessary to fully evaluate potential environmental impacts associated with waste generation and disposal. Also, clarification is necessary in Table 3-55, as described above, because for the upper range limit of RCRA waste quantities, the Table shows more waste for Phase 1 than for "Total for Phase 1 and Phase 2."

RESPONSE:

The major portion of the RCRA waste is the potential waste CaF_2. The production of CaF_2 is much less in Phase 2 than Phase 1. This is a result of using water on certain process scrubbers for capturing HF as aqueous HF (versus KF with KOH) and transferring this liquid to the Phase 2 oxide process to react with DUF_6. The HF solution after reacting with DUF_6 is eventually distilled and separated as anhydrous hydrofluoric acid. Updated estimates for Phase 1 and Phase 2 RCRA wastes are provided in Table 3-59 shown in the Environmental Report Documentation Impact for RAI 20-a. Note the asterisk for the CaF_2 in Table 3-59 which reads "Less CaF_2 is generated from the operations in Phase 2 than in Phase 1."

Environmental Report Documentation Impact: Paragraph six of Section 3.12.2, "Solid Waste Management," will be revised to clarify the negative differential in the RCRA waste from Phase 1 to Phase 2 operations. Section 3.12.2 will read as follows:

Resource Conservation and Recovery Act (RCRA) hazardous wastes will be collected and packaged in approved containers and shipped by a licensed RCRA transporter and sent to licensed RCRA disposal facility. Under New Mexico regulations, a facility that generates more than 1,000 kg (2,200 lb) per month is a large quantity generator of RCRA wastes. In New Mexico, hazardous waste generators are classified by the actual monthly generation rate, not the annual average. The major portion of the RCRA waste is the potential waste CaF_2. As shown in Table 3-59, the production of CaF_2 is much less in Phase 2 than Phase 1. This is a result of using water on certain process scrubbers for capturing HF as aqueous HF (versus KF with KOH) and transferring this liquid to the Phase 2 oxide process to react with DUF_6. The HF solution after reacting with DUF_6 is eventually distilled and separated as anhydrous hydrofluoric acid.

Official Responses to Environmental Report RAIs

RAI 21

Provide additional information regarding past land use of the project area that may have already been collected by IIFP.

a. *Provide any information that has been collected on non-developmental human use such as cattle grazing. Include, if available, property research results and informant interview memoranda.*

This information is necessary in order to document past land uses/activities that have taken place in the project area and also to evaluate the potential for historic and cultural resources within the project area. The Phase I Environmental Site Assessment documents past development through historic aerial photographs. These photographs document that the project area has been largely undeveloped, but do not document human use that would not be considered "development," such as extensive use of the area as rangeland for cattle. Although it is not required in the negative survey report that was prepared by the archaeological consultant, this information may have been gathered through property research or informant interviews.

RESPONSE:

The 4th paragraph of Section 1.4.7, "Surveys Conducted," of the Environmental Report provides a listing of various governmental agency databases that were reviewed as part of the Phase 1 Environmental Site Assessment conducted in 2009 by BBC International, Inc. on the subject property. The results of those reviews are provided in Section 1.4.7. Additionally, a real estate title search was conducted as part of the Phase 1 Environmental Site Assessment. The title search is included below.

Official Responses to Environmental Report RAIs

NO. 09-231-C
TITLE REPORT & LIMITED CERTIFICATE OF SEARCH

The undersigned, ELLIOTT & WALDRON TITLE & ABSTRACT CO., INC., a corporation duly bonded and qualified under the laws of the State of New Mexico, and engaged in the business of making and certifying to abstract of title to real estate in the State aforesaid, does hereby certify that with reference to the following described real estate:

SURFACE TITLE ONLY:

ALL OF SECTION 27, TOWNSHIP 18 SOUTH, RANGE 36 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.

a search of the records of the office of the County Clerk of Lea County, New Mexico, with the exception of financing statements or other documents reflecting security interest or possible security interests in crops, fixtures or other personal property filed in the records of the County Clerk, pursuant to the Uniform Commercial Code, discloses the following:

1. **RIGHT OF WAY:** dated 06-18-51, filed 06-23-51, Book 141, Page 25, Deeds Records, Lea County, New Mexico. Executed by Hobbs Houses, Inc. to New Mexico Electric Service Corp.

2. **RIGHT OF WAY:** dated 07-03-58, filed 08-04-58, Book 225, Page 173, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to Lea County Board of Commissioners.

3. **RIGHT OF WAY:** dated 08-25-64, filed 09-18-64, Book 285, Page 439, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to Southwestern Public Service Co.

4. **RIGHT OF WAY:** dated 03-15-65, filed 04-29-65, Book 291, Page 317, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to Northern Natural Gas Company.

5. **RIGHT OF WAY:** dated 05-17-72, filed 06-15-72, Book 329, Page 527, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to Santa Fe Pipeline Co.

6. **RIGHT OF WAY:** dated 09-18-72, filed 09-22-72, Book 331, Page 58, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to Southwestern Public Service Company.

7. **NOTICE:** dated –, filed 01-05-78, Book 346, Page 329, Miscellaneous Records, Lea County, New Mexico. Executed by Llano, Inc. to Ex Parte. RE: RW from State to Llano, Inc.

8. **RIGHT OF WAY:** dated 10-30-78, filed 10-03-79, Book 376, Page 776, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to Northern Natural Gas Company.

9. **NOTICE:** dated –, filed 08-25-80, Book 374, Page 496, Miscellaneous Records, Lea County, New Mexico. Executed by Llano, Inc. to Ex Parte. RE: RW

10. **NOTICE:** dated –, filed 05-11-82, Book 400, Page 711, Miscellaneous Records, Lea County, New Mexico. Executed by Llano, Inc. to Ex Parte. RE: RW from State.

11. **RIGHT OF WAY:** dated 10-17-83, filed 12-19-83, Book 409, Page 338, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to Southwestern Public Service Company.

12. **NOTICE:** dated 03-01-85, filed 03-06-85, Book 443, Page 286, Miscellaneous Records, Lea County, New Mexico. Executed by Llano, Inc. to Ex Parte. RE: RW

13. **RIGHT OF WAY:** dated 09-04-86, filed 09-18-86, Book 430, Page 287, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to General Telephone Company of the Southwest.

14. **RIGHT OF WAY:** dated 06-10-87, filed 07-07-87, Book 436, Page 632, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to Southwestern Public Service Company.

15. **EASEMENT / RIGHT OF WAY:** dated 06-19-89, filed 08-10-89, Book 455, Page 312, Deed Records, Lea County, New Mexico. Executed by Broadmoor Properties, Ltd. to Southwestern Public Service Company.

16. **CONVEYANCE ASSIGNMENT:** dated 12-31-90, filed 01-02-91, Book 536, Page 273, Miscellaneous Records, Lea County, New Mexico. Executed by Enron Corp. f/k/a Northern Natural Gas Company to Northern Natural Gas Company. RE: RW 376-776

17. **CONVEYANCE ASSIGNMENT AND BILL OF SALE:** dated 3-31-92, filed 4-9-92, Book 555, Page 287, Miscellaneous Records, Lea County, New Mexico. Executed by The Maple Gas Corporation, The Maple Gathering Corporation to Picor Pipeline Company. RE: RW

18. **CONVEYANCE ASSIGNMENT AND BILL OF SALE:** dated 3-31-92, filed 4-9-92, Book 555, Page 413, Miscellaneous Records, Lea County, New Mexico. Executed by The Maple Gas Corporation, The Maple Gathering Corporation to Picor Pipeline Company. RE: RW

19. **RIGHT OF WAY:** dated –, filed 09-23-94, Book 505, Page 92, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to Pinnacle Natural Gas Company.

20. **ASSIGNMENT AND CONVEYANCE:** dated 10-27-94, filed 11-15-94, Book 506, Page 340, Deed Records, Lea County, New Mexico. Executed by Llano, Inc. to Minerals, Inc.

21. **PARTIAL ASSIGNMENT OF RIGHT OF WAY, EASEMENTS AND PERMITS:** dated 12-29-94, filed 03-01-95, Book 509, Page 378, Deed Records, Lea County, New Mexico. Executed by Northern Natural Gas Company to Hobbs Processing Company. RE: RW 376-776

22. **RIGHT OF WAY:** dated 05-22-95, filed 06-20-95, Book 512, Page 481, Deed Records, Lea County, New Mexico. Executed by State of New Mexico to GPM Gas Corporation.

23. **RIGHT OF WAY:** dated 01-23-96, filed 03-28-96, Book 717, Page 422, Lea County Records, Lea County, New Mexico. Executed by State of New Mexico Commissioner of Public Lands to GPM Gas Corporation.

24. **PIPELINE DEED AND ASSIGNMENT:** dated 08-20-96, filed 09-04-96, Book 747, Page 689, Lea County Records, Lea County, New Mexico. Executed by Chevron U.S.A. Inc., f/k/a Gulf Oil Corporation to Midstream Combination Corp. RE: RW from NM State Hwy Dept to Gulf Oil Corp.

25. **DEED ASSIGNMENT AND CONVEYANCE:** dated 08-29-96, filed 09-05-96, Book 748, Page 506, Lea County Records, Lea County, New Mexico. Executed by NGC Corp., NGC Holding Company, Inc., Warren Petroleum G.P. to WPC LP, Inc., Warren Petroleum Company, Limited Partnership. RE: 747-689 RW from NM State Hwy Dept to Gulf Oil Corp.

26. **RIGHT OF WAY:** dated 02-27-80, filed 03-25-98, Book 865, Page 216, Lea County Records, Lea County, New Mexico. Executed by State of New Mexico to Gulf Oil Corporation.

27. **ASSIGNMENT AND CONVEYANCE:** dated 08-31-98, filed 01-11-99, Book 929, Page 618, Lea County Records, Lea County, New Mexico. Executed by Koch Pipeline Company, LP to Koch D-K II, Inc. RE: RW 329-527

28. **ASSIGNMENT AND CONVEYANCE:** dated 09-01-98, filed 01-11-99, Book 929, Page 629, Lea County Records, Lea County, New Mexico. Executed by Koch D-K II, Inc. to Diamond-Koch, LP. RE: RW 329-527

29. **ASSIGNMENT AND CONVEYANCE:** dated 09-01-98, filed 01-11-99, Book 929, Page 640, Lea County Records, Lea County, New Mexico. Executed by Diamond-Koch, LP to Diamond-Koch II, LP. RE: RW 329-527

30. **ASSIGNMENT AND BILL OF SALE:** dated 09-01-98, filed 04-02-99, Book 946, Page 1, Lea County Records, Lea County, New Mexico. Executed by Dynegy Midstream Services, Limited Partnership to Versado Gas Processors, LLC RE: RW from State to Gulf dated 3-19-80

31. **CONVEYANCE ASSIGNMENT AND BILL OF SALE:** dated 05-01-99, filed 07-01-99, Book 964, Page 1, Lea County Records, Lea County, New Mexico. Executed by Texas-New Mexico Pipe Line Company to Eott Energy Pipeline Limited Partnership. RE: RW from State to Gulf dated 3-19-80

32. **ASSIGNMENT OF EASEMENTS:** dated 12-30-97, filed 07-20-99, Book 967, Page 597, Lea County Records, Lea County, New Mexico. Executed by AOG Gas Transmission Company, LP to Transwestern Pipeline Company. RE: RW from State of NM to Gulf dated 6-24-77

33. **CONVEYANCE ASSIGNMENT AND BILL OF SALE:** dated 05-01-99, filed 07-20-99, Book 968, Page 1, Lea County Records, Lea County, New Mexico. Executed by Texas-New Mexico Pipe Line Company to Eott Energy Pipeline Limited Partnership. RE: 964-1

34. **ORDINANCE:** dated 11-02-99, filed 11-02-99, Book 2, Page 300, Lea County Records, Lea County, New Mexico. Executed by Lea County Board of Commissioners to Ex Parte.

35. **ORDINANCE:** dated 11-02-99, filed 11-02-99, Book 2, Page 310, Lea County Records, Lea County, New Mexico. Executed by Lea County Board of Commissioners to Ex Parte.

36. **NOTICE:** dated –, filed 11-29-00, Book 1049, Page 777, Lea County Records, Lea County, New Mexico. Executed by Llano, Inc. to LG&E Natural Pipeline, LLC.

37. **ASSIGNMENT:** dated 06-29-01, filed 08-02-01, Book 1093, Page 151, Lea County Records, Lea County, New Mexico. Executed by Raptor Natural Pipeline, LLC, f/k/a LG&E Natural Pipeline, LLC, Successor by merger of LG&E Natural Pipeline CO & LG&E Storage, LLC to Raptor Natural Pipeline, LLC. RE: RW 346-329

38. **ORDINANCE:** dated 05-07-02, filed 05-07-02, Book 2, Page 411, Lea County Records, Lea County, New Mexico. Executed by Lea County Board of Commissioners to Ex Parte.

39. **CONVEYANCE ASSIGNMENT AND BILL OF SALE:** dated –, filed 05-22-02, Book 1148, Page 282, Lea County Records, Lea County, New Mexico. Executed by Diamond-Koch II, LP to Chaparral Pipeline Company, LP.

40. **CONFIRMATORY CONVEYANCE AND ASSIGNMENT:** dated 06-10-03, filed 06-25-03, Book 1233, Page 843, Lea County Records, Lea County, New Mexico. Executed by Pinnacle Natural Gas Company to Markwest Pinnacle, LP. RE: RW 505-92

41. **AMENDMENT AND CORRECTION TO CONVEYANCE ASSIGNMENT AND BILL OF SALE:** dated –, filed 08-12-03, Book 1245, Page 550, Lea County Records, Lea County, New Mexico. Executed by Diamond-Koch II, LP to Chaparral Pipeline Company, LP. RE: Amends 1148-282

42. **AMENDMENT TO CONVEYANCE ASSIGNMENT AND BILL OF SALE:** dated 3-31-04, filed 04-13-04, Book 1295, Page 558, Lea County Records, Lea County, New Mexico. Executed by Texas-New Mexico Pipe Line Company to Link Energy Pipeline LP, f/k/a Eott Energy Pipeline LP. RE: 968-1 and 964-1

43. **CONVEYANCE ASSIGNMENT AND BILL OF SALE:** dated 04-30-04, filed 05-14-04, Book 1304, Page 172, Lea County Records, Lea County, New Mexico. Executed by Raptor Gas Transmission LLC to Duke Energy Field Services, LP. RE: RW 346-329

44. **CONVEYANCE ASSIGNMENT AND BILL OF SALE:** dated 04-30-04, filed 05-14-04, Book 1304, Page 262, Lea County Records, Lea County, New Mexico. Executed by Raptor Natural Pipeline LLC to DEFS Raptor Pipeline, LLC. RE: RW 400-711

45. **AFFIDAVIT:** dated –, filed 5-6-05, Book 1372, Page 393, Lea County Records, Lea County, New Mexico. Executed by Raptor Natural Pipeline, LLC successor to LG&E Natural Pipeline LLC to Ex Parte. RE: Notice 1049-777.

This Title Report and Limited Certificate of Search covers a period of time from:

JUNE 23, 1951 AT 7:00 A.M. TO JUNE 1, 2009 AT 7:00 A.M.

This Title Report and Limited Certificate of Search is intended to reflect only those documents that appear to convey title to said real estate. We have made no attempt to show any other documents or court proceedings of record affecting said real estate, a complete listing will be furnished upon request.

Since reference to the documents above must be made to determine their validity, no liability is assumed for any defects or errors which may appear thereon, nor for failure to show District Court matters which do not affect title to real estate. Copies of these documents can be obtained upon request at an additional charge.

This is not an abstract, and the liability of Elliott & Waldron Title & Abstract Co., Inc., issuer under this Limited Certificate, is limited to a refund of the consideration paid for this Limited Certificate and is to run only in favor of the person paying such consideration in the first instance. Issuer expressly disclaims any and all other liabilities, warranties, or responsibilities hereunder to any and all other persons.

TITLE REPORT & LIMITED CERTIFICATE OF SEARCH PAGE NO. 5

IN WITNESS WHEREOF, the said Elliott & Waldron Title & Abstract Co., Inc., has caused this Certificate to be signed by its proper officer on this 10th day of June, 2009.

ELLIOTT & WALDRON TITLE & ABSTRACT CO., INC.

By Becky Sandoval
Becky Sandoval, Assistant Secretary

Searcher-Bjs
NO. 09-231-C

Environmental Report Documentation Impact: None

Official Responses to Environmental Report RAIs

RAI 21

Provide additional information regarding past land use of the project area that may have already been collected by IIFP.

b. Provide available information concerning previous development for oil/gas and other energy infrastructure such as exploratory wells, abandoned oil/gas exploration infrastructure, and gas and power line rights-of-ways.

This information is necessary in order to document past land uses/activities that have taken place in the project area and also to evaluate the potential for historic and cultural resources within the project area. The Phase I Environmental Site Assessment documents past development through historic aerial photographs. These photographs document that the project area has been largely undeveloped, but do not document human use that would not be considered "development," such as extensive use of the area as rangeland for cattle. Although it is not required in the negative survey report that was prepared by the archaeological consultant, this information may have been gathered through property research or informant interviews.

RESPONSE:

No oil/gas drilling has been conducted on the site. However, numerous transmission lines and pipelines as well as miscellaneous oil/gas facilities are located on the site. The 2nd and 3rd paragraphs of Section 1.4.7, "Surveys Conducted," of the Environmental Report provide a listing of the lines and miscellaneous facilities on the site. Figure 1-6 of the Environmental Report depicts the easements on the IIFP Site. Figure RAI 21-b-1 below provides a map of the 640-acre IIFP Site showing the right-of-ways to the gas and electric companies in relation to the IIFP Facility. Figure RAI-b-2 provides a listing of those right-of-ways.

Environmental Report Documentation Impact: None.

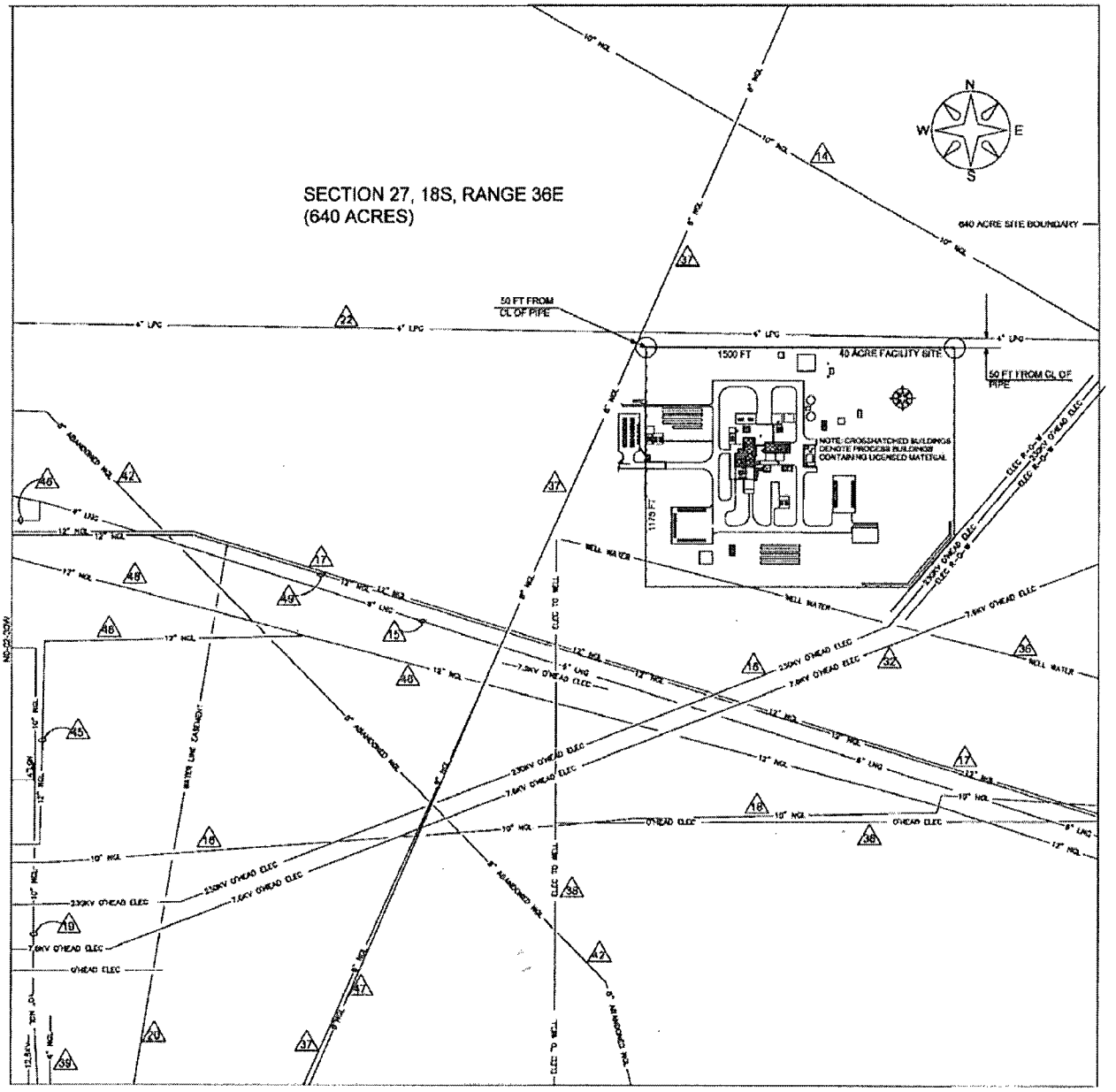

Figure RAI 21-b-1 Right-of Ways on IIFP 640-Ac site

Official Responses to Environmental Report RAIs

PIPELINE OWNER/CONTACT	PIPELINE NO.	TYPE	ACTIVE/INACTIVE	PRESSURE (PSI)	SIZE
DCP MIDSTREAM	14	NATURAL GAS	ACTIVE	280	10.75" OD/.188" WALL
CONTACT	17	NATURAL GAS	ACTIVE	235	12.75" OD
KEN SLICER	19A & 19B	NATURAL GAS	ACTIVE	256	10.75" OD/.188" WALL
(432)620-4028	20	WATER EASEMENT			
	45A & 45B	NATURAL GAS	ACTIVE	372	ASSUME 12.75" OD
	46	LIQ NATURAL GAS	ACTIVE	900	8.427" OD
	47	NATURAL GAS	ACTIVE		8.240" OD
	48A & 48B	NATURAL GAS	ACTIVE	372	12.75" OD/.188" WALL
	49	NATURAL GAS	ACTIVE	267	12.75" OD/.25" WALL
NEW MEXICO GAS COMPANY	37	NATURAL GAS	ACTIVE	900	8.248" OD
CONTACT	53	TELEPHONE CABLE			
JON JONES					
(505)697-3528					
ENTERPRISE	15	LIQ NATURAL GAS	ACTIVE	900	8.427" OD
CONTACT					
MIKE ST. JOHN					
(432)881-2617					
MARKW.-ST	18	NATURAL GAS	ACTIVE	1000	10.75" OD
CONTACT	40	DOES NOT EXIST			
MATTHEW CARNES					
(303)925-9219					
NORTHERN NATURAL GAS COMPANY	LINES WERE SOLD IN 1994 TO HOBBS PROCESSING STATION NOW DCP MIDSTREAM				
CHEVRON	22	LPG	ACTIVE	600	4.5" OD
CONTACT					
DENNIS REEVES					
(432)687-7161					
PLAINS PIPELINE	42		ABANDONED		8.240" OD
SOUTHWESTERN PUBLIC SERVICE	13	230 KV	ACTIVE		
	16	230 KV	ACTIVE		
	32	230 KV	ACTIVE		
	36	WATERLINE	ACTIVE		

Figure RAI 21-b-2 Listing of the Right of Ways on the IIFP 640-Acre Site

Official Responses to Environmental Report RAIs

RAI 22

Provide support for the ER claim of better than industry average occupational safety statistics.

For example IIFP could provide the last 5 years of Occupational Safety and Health Administration reports for an IIFP facility that does comparable work.

The discussion of worker safety in Section 3.11.2.1 of the ER (IIFP, 2009a) does not provide details to support the claim of better than industry average.

RESPONSE:

The first sentence of Section 3.11.2.1 claiming that occupational injuries rates are expected to be better than industry average occupational safety statistics has been deleted. The manufacturing industry and the private industry safety statistics are compared for the years 2005 through 2009 in Table RAI 22-1 with those of INIS (the parent company of IIFP). Since the total number of employees for INIS is generally below 30 for those years, comparisons with the private industry and manufacturing industry would not be valid. Section 3.11.2.1 will be revised to reflect the 5-year data instead of the 2007 data supplied initially in the ER.

Table RAI 22-1 Comparison of INIS Occupational Safety Statistics with the Manufacturing and Private Industries

Industry	Year	Annual Average Employment (Thousands)	Total Recordable Cases	DART[1]			ORC[1]
				Total	DAFW[1]	DJTR[1]	
Manufacturing	2009	12,696.5	4.3	2.3	1.0	1.3	2.0
Manufacturing	2008	13,735.0	5.0	2.7	1.2	1.5	2.3
Manufacturing	2007	14,071.4	5.6	3.0	1.3	1.7	2.5
Manufacturing	2006	14,150.0	6.0	3.3	1.4	1.9	2.7
Manufacturing	2005	14,212.8	6.3	3.5	1.5	2.0	2.8
Manufacturing Average	(2005-2009)	13,773.1	5.4	3.0	1.3	1.7	2.5
Private Industry	2009	111,469.1	3.6	1.8	1.1	.8	2.0
Private Industry	2008	115,352.6	3.9	2.0	1.1	.9	1.9
Private Industry	2007	114,833.4	4.2	2.1	1.2	0.9	2.1
Private Industry	2006	111,273.1	4.4	2.3	1.3	1.0	2.1
Private Industry	2005	109,127.0	4.6	2.4	1.4	1.0	2.2
Private Industry Average	(2005-2009)	112,411.0	4.1	2.1	1.2	0.9	2.1
INIS	2009	26.7 (actual)	0	0	0	0	0
INIS	2008	30.6 (actual)	2	1	0	1	1
INIS	2007	25.36 (actual)	1	1	0	0	1
INIS	2006	25.53 (actual)	0	0	0	0	0
INIS	2005	18.32 (actual)	0	0	0	0	0
INIS Average	(2005-2009)	25.3 (actual)	0.6	0.4	0	0.2	.4

[1] DART – Days Away from Work, Job Transfer, or Restricted Cases; DAFW – Days Away from Work Cases; DJTR - Days of Job Transfer or Restricted Only Cases; ORC – Other Recordable Cases

Environmental Report Documentation Impact: Section 3.11.2.1, "Occupational Injury Rates," will be revised to delete the claim that occupational injury rates at the IIFP Facility are expected to be better that

the industry average and to use the 2005-2009 average industry rates for calculating the expected occupational injury rates for the construction of IIFP Facility and for the operations of the facility. Former Table 3-54 will be updated and renumbered to Table 3-57.

3.11.2.1 Occupational Injury Rates

~~Occupational injury rates at the IIFP facility are expected to be better than the industry average owing to the commitment that IIFP is making in a safe design basis for facilities and programs, the safety culture, and adherence to the ISMS program and procedures.~~ IIFP senior management commitment to safety is evident by its safety experience at its Idaho Falls facility and the OSHA Safety and Health Achievement Recognition Program (SHARP) recognitions it has received. Common occupational accidents at uranium plants similar to the ~~proposed~~ IIFP ~~plant~~ Facility typically involve hand and finger injuries, tripping accidents, minor burns and impacts due to striking objects or falling objects. Table 3-~~54~~57 shows incidence rates representative of the nonfatal occupational injuries from the construction and operation for Total Private Industry. This representative calculation is based on the Bureau of Labor Statistics of the U.S. Department of Labor (2005-2009~~7~~). The representative number of injuries would be that number for the Total Private Industry rate if the industry had an average of 200 workers during the construction of the facility for 18 months and 150 average workers during the operations of the facility.

Table 3- ~~54~~57 Nonfatal Occupational Injuries Projected for Construction and Operations of the IIFP Facility

Case Type	Construction (18 months)		Operations (Yearly)	
	Incidence Rate[1]	Number	Incidence Rate[1]	Number
Total Recordable Cases (TRC)	4.1~~2~~	12.3~~6~~	4.1~~2~~	6.2~~3~~
Days Away from Work, Job Transfer, or Restriction Cases (DART)	2.1	6.3	2.1	3.15
Days Away From Work Cases (DAFW)	1.2	3.6	1.2	1.8
Days of Job Transfer or Restricted Only Cases (DJTR)	0.9	2.7	0.9	1.35
Other Recordable Cases (ORC)	2.1	6.3	2.1	3.15
~~TRC by Employment Size~~	~~5.3~~	~~15.9~~	~~5.3~~	~~7.95~~

Source: Bureau of Labor Statistics, U.S. Department of Labor (BLS, 2005-2009~~8~~)
[1]2005-2009~~7~~ Incidence Rate per 100 full-time workers for Total Private Industry

Official Responses to Environmental Report RAIs

RAI 23

Provide clarifications on mitigation measures.

Separate the mitigation measures proposed in Sections 5.2.3, "Geology and Soils," 5.2.4, "Water Resources," 5.2.5, "Ecological Resources," and 5.2.6, "Air Impacts," into those that would be implemented during the project's pre-construction/construction and during operations. The text in these sections describes the mitigation measures listed as being in place to minimize impacts during construction or operations. However, it is not always clear at which time a specific mitigation will be implemented. For example, in Section 5.2.3, one mitigation measure that "will be in place during pre-licensing and general construction, operations, and decommissioning" is described as "Berms will be utilized and Spill Prevention Control and Countermeasures Plan will be implemented."

It is reasonable that a Spill Prevention Control and Countermeasures (SPCC) Plan will be implemented during construction to mitigate fuel or similar liquid spills; however, in Section 5.2.13, "Waste Management," IIFP states that "a Spill Prevention Control and Countermeasures Plan will be prepared prior to the start of operation of the facility or prior to the storage of oil on site...." It is not clear when reading Section 5.2.3 and 5.2.13 if the SPCC Plan will be in place during pre-construction and construction as well as during operations. As written in the ER, the proposed mitigations cannot always be associated with a specific project activity.

RESPONSE:

Sections 5.2.3, 5.2.4, 5.2.5, and 5.2.13 will be revised to list separately the mitigation measures to be taken during construction activities and operations.

Environmental Report Documentation Impact: Sections 5.2.3, 5.2.4, 5.2.5, and 5.2.13 will be revised to separate the mitigation measures to be taken during construction activities from the mitigation measures to be taken during operations. Revised Sections 5.2.3, 5.2.4, 5.2.5, and 5.2.13 will read as follows:

5.2.3 Geology and Soils (Revised section.)

Mitigation measures will be in place during preconstruction ~~licensing~~ and general construction~~, operations, and decommissioning~~ to minimize impact to geology and soils. ~~These measures include:~~Erosional impacts due to site clearing and grading will be mitigated by utilization of construction and erosion control BMPs, some of which are further described below~~:~~.

- The construction footprint will be minimized to the extent possible.
- Disturbed soils will be stabilized by acceptable means as part of the construction work.
- Earthen berms, dikes and sediment fences will be utilized as necessary during construction ~~phases~~ stages to limit suspended solids in runoff.
- Cleared areas not covered by structures or pavement will be stabilized by acceptable means as soon as practical.
- Watering may be used to control fugitive dust.
- Collect surface runoff in temporary ~~r~~detention basins (during construction) ~~and permanent retention/evaporation basins (during operations)~~.

- Standard drilling and blasting techniques, if required, will be used to minimize impact to bedrock; reducing the potential for over excavation thereby minimizing damage to the surrounding rock.
- Drainage culverts and ditches will be stabilized and lined with rock aggregate to reduce flow velocity.
- Soil stockpiles generated during construction will be placed in a manner to reduce erosion.
- Excavated materials will be reused whenever possible.
- Berms will be utilized and Spill Prevention Control and Countermeasures Plan will be implemented.

Mitigation measures will be in place during the operations of the IIFP to minimize impact to geology and soils. These measures include:

- Routine visual inspections and preventive maintenance will be conducted.
- Above ground storage tanks of appropriate materials will be constructed.
- Secondary containment for tanks storing petroleum products and hazardous chemicals will be used.
- ~~Berms will be utilized and Spill Prevention Control and Countermeasures Plan will be implemented.~~
- Spill cleanup materials in the areas of fuel line and tank hose connections will be maintained.
- Contaminated soils will be sampled, analyzed, and managed in accordance with NRC, State, and other Federal requirements.
- ~~An approved Decommissioning Plan for ultimate NRC release of the site for unrestricted use and license termination will be established and implemented.~~

5.2.4 Water Resources (Revised 1st paragraph resulting in 2 paragraphs.)

Mitigation measures will be in place to minimize potential impact on water resources during preconstruction ~~licensing~~ and general construction~~, operations, and decommissioning~~ of the IIFP F~~f~~acility. As discussed in ER Section 4.4.7, "Control of Impacts to Water Quality," there is little impact on any groundwater or surface water resources. These mitigation measures also prevent soil contamination. These include employing BMPs and the control of hazardous materials and fuels. In addition, the following controls are also implemented:

- Construction equipment will be in good repair without visible leaks of oil, greases, or hydraulic fluids.
- Control of spills during construction will be in conformance with the Spill Prevention Control and Countermeasures Plan procedures.
- Use of BMPs will assure storm-water runoff related to these activities will not release runoff into nearby sensitive areas.
- BMPs will also be used for dust control associated with excavation and fill operations during construction. Water conservation will be considered when deciding how often dust suppression sprays will be applied.
- Silt fencing and sediment traps will be used.
- Stone construction pads will be placed at entrance/exit if unpaved construction access adjoins a state road.
- Basins are arranged to provide for the prompt, systematic sampling of runoff in the event of any special needs.

- Water quality impacts will be controlled during construction ~~phases~~ stages by compliance with the National Pollution Discharge Elimination System General Permit requirements and by applying BMPs as detailed in the Stormwater Pollution Prevention Plan.
- A Spill Prevention Control and Countermeasure Plan will be implemented for the facility to identify potential spill substances, sources and responsibilities.

Mitigation measures will be in place to minimize potential impact on water resources during operations of the IIFP facility. These include:

- All above ground petroleum storage tanks will be bermed.
- Conduct routine visual inspections and preventive maintenance.
- Any hazardous materials will be handled by approved methods and shipped off site to approved disposal sites. Sanitary wastes generated during site construction will be handled by portable systems; until such time that the plant sanitary waste treatment facility is available for use.
- The facilities liquid effluent collection and treatment system provides a means to control liquid waste with the plant including the collection, evaporation, and minimization of liquid wastes for disposal.
- Liquid effluent concentration releases to the evaporative tank will be below 10 CFR 20 uncontrolled release limits.
- Control of surface water runoff will be required for activities as covered by the NPDES General Permit. As a result, no impacts are expected to surface or groundwater bodies.
- Stormwater and effluent sampling ~~would~~ will be conducted as necessary by the NPDES permit to protect surface water quality. In addition, site-wide groundwater levels ~~would~~ will continue to be monitored routinely, and the groundwater monitoring-well and pumping-well networks ~~would~~ will continue to be analyzed to confirm that the changes in groundwater levels associated with the ~~Proposed Action~~IIFP Facility are minimal.

5.2.5 Ecological Resources (Revised section.)

Mitigation measures will be in place to minimize the potential impact on ecological resources during construction activities~~, operations and decommissioning~~ of the facility. These include:

- Use of BMPs recommended by the State of New Mexico or various federal agencies;
- No herbicides will be used during construction;~~, but may be used in limited amounts according to government regulations and manufacturer's instructions to control unwanted noxious vegetation during operation of the facility;~~
- Minimize the construction footprint to the extent possible; and
- ~~The use of retention (evaporation) basins to avoid direct discharge of stormwater runoff from process areas to any waters of the United States; and~~
- Implement site stabilization practices to reduce the potential for erosion and deposition of sediment. After construction is complete, the site will be stabilized with native grass species, pavement, and crushed stone to control erosion. Ditches, unless excavated in rock, will be lined with riprap, vegetation, or other suitable material as dictated by water velocity to control erosion. Furthermore, any eroded areas that may develop will be repaired and stabilized.

Mitigation measures will be in place to minimize the potential impact on ecological resources during operations of the facility. The measures and other proposed practices to minimize impact to wildlife include the following:

- The use of retention (evaporation) basins to avoid direct discharge of stormwater runoff from process areas to any waters of the United States;
- Herbicides may be used in limited amounts according to government regulations and manufacturer's instructions to control unwanted noxious vegetation during operation of the facility. ~~Proposed practices to minimize impact to wildlife include:~~
  - Placement of a raptor perch in an unused open area;
  - Install bird feeders at the visitor's center;
  - Placement of quail feeders in the unused open areas away from buildings;
  - The management of unused open areas, including areas of native grasses and shrubs for the benefit of wildlife;
  - Use native plant species (i.e., low-water consuming plants) to vegetate disturbed areas and to enhance wildlife habitat;
  - Use netting, or other suitable material, to ensure migratory birds are excluded from retention (evaporation) basins that do not meet New Mexico Water Quality Control Commission surface water standards for wildlife usage;
  - Use animal friendly fencing within the Site so that wildlife cannot be injured or entangled;
  - Minimize the amount of open trenches at any given time; and
  - Treat or recycle of process air-scrubbers system liquids.

In addition to proposed wildlife management practices above, IIFP will consider recommendations from appropriate state and federal agencies, including the United States Fish and Wildlife Service and the New Mexico Department of Game and Fish.

5.2.13 Waste Management (Revised 3rd paragraph only.)

IIFP will implement a spill control program for accidental oil spills. A Spill Prevention Control and Countermeasure (SPCC) Plan will be prepared prior to the start of ~~operation~~ construction of the facility or prior to the storage of oil on site in excess of de minimis quantities and will contain the following information:

- Identification of potential significant sources of spills and a prediction of the direction and quantity of flow that would result from a spill from each source.
- Identification of the use of containment-type or diversionary structures such as dikes, berms, culverts, booms, sumps, and diversion basins used at the facility to prevent discharged oil from reaching the surrounding environment.
- Procedures for inspection of potential sources of spills and spill containment/diversion structures.
- Assigned responsibilities for implementing the plan, inspections, and reporting.
- As part of the SPCC Plan, other measures will include control of drainage of rain water from dike areas, containment of oil and diesel fuel in bulk storage tanks, above-ground tank integrity testing, and oil and diesel fuel transfer operational safeguards.

Official Responses to Environmental Report RAIs

RAI 24

Verify the distance to the nearest residence from the proposed IIFP facility.

The ER (IIFP, 2009a) in Section 1.3.3, "The Proposed Site," states that the nearest residence is 8.5 km (5.3 mi) from the northern boundary of the site. Local maps appear to indicate the nearest residence could be approximately 1 mi from the northwest corner of the site (see attached map). Accurate information about the distance to residences is needed to fully assess potential impacts to those residences.

RESPONSE:

The nearest residence is indeed closer than that indicated in Rev. A of the ER. The nearest neighbor is 1.6 miles west northwest of the site. The various sections of the ER will be revised to reflect the correct distance of the nearest residence. Those sections showing exposure data to the nearest resident were also revised to reflect the corrected distance.

Environmental Report Documentation Impact: Remove Chapter 4 of the ER, Revision A in its entirety and replace with rewrite of Chapter 4 provided as a separate attachment. Exposure data to the nearest resident are shown in Section 4.12.2.2.2, Public and Occupational Exposure Impacts." Various sections of the ER will be revised to show that the nearest neighbor at 1.6 miles from the site and the impact from that distance as shown below:

1.3.3 The Proposed Site (Revised 8th paragraph)

Surrounding property consists of vacant land and the industrial Xcel Energy Cunningham Station on the west boundary (NM 483) of the IIFP proposed property line, Xcel Energy Maddox Station on the east southeast side, ~~and~~ Colorado Energy Hobbs Generating Station on the east northeast of the site and DCP Midstream – Linam Ranch Plant is southeast of the site. Cattle grazing, on nearby sites, occurs throughout the year. Land around the proposed site has been mostly developed by the oil and gas industry. The nearest residence is situated at the west northwest~~east~~ of the Site approximately ~~8.5~~2.6 km (~~5.3~~1.6 mi) from the northern boundary. There are no known public recreational areas within 8 km (5 mi) of the Site.

3.1.2 Description of Off-site Areas (Revised 5th paragraph.)

The nearest known residence to IIFP is situated west northwest~~east~~ of the site 2.6~~8.5~~ km (1.6~~5.3~~ mi) from the northern boundary fence. There are no known public recreational areas within 8 km (5 mi) of the site. Transportation corridors are discussed in ER Section 3.2, "Transportation." A discussion of schools and hospitals is included in ER Section 3.10, "Socioeconomic."

3.7.2 Community Distribution (Revised 1st paragraph)

The ~~proposed~~ IIFP 259-ha (640-ac~~re~~) Section is located in a sparely populated area of southeastern New Mexico that is used primarily for intermittent cattle grazing. The nearest commercial noise receptors are Xcel Energy Cunningham ~~Generating~~ Station on the west property line of the site, the Xcel Energy Maddox ~~Generating~~ Station on the east southeast side, and the Colorado Energy Hobbs Generating Station on the east northeast of the site. The nearest known residential noise receptor is approximately ~~8.5~~ 2.6 km (~~5.3~~1.6 mi) west northwest~~east~~ of the site.

4.7.1.1 Construction Impacts (revised 5th paragraph)

Due to the temporary and episodic nature of construction and because of the significant distance to the nearest residence approximately 2.6~~8.5~~ km (1.6~~5.3~~ mi) to the west northwest~~northeast~~ of the site, and since construction activities largely will be during weekday daylight hours, actual construction noise at the site is not expected have a significant effect on the closest resident. The noise level is not expected to exceed 50 dBA at the nearest residence. Vehicle traffic will be the most noticeable cause of construction noise. There ~~are no sensitive receptors (hospitals, schools, residences)~~ is a café located close to the intersection of U.S. 62/180 and NM 483 at Arkansas ~~conj~~Junction. Personnel at the café ~~who~~ will ~~have~~ ~~been~~ the most aware of the increase in noise from the traffic or from the construction not expected to exceed 48 dBA~~due to proximity to the source~~. Noise impacts from preconstruction or general construction are anticipated to be SMALL.

4.7.1.2 Operational Impacts (Revised 3rd paragraph.)

Since the nearest residence is located west northwest~~east~~ of the IIFP Ssite at a distance of approximately 2.6~~8.5~~ km (1.6~~5.3~~ mi), the resultant sound level exposure will be below the perception of the human ear. This is because a noise source over such a ~~great~~ distance will be dispersed in air and absorbed by natural landscape, vegetation, and buildings to the point of being masked by background ambient noise at the receptor. Noise impacts from the Phase 1 or Phase 2 operation of the IIFP facility are anticipated to be SMALL.

4.7.3.2 Operations (add new section and new 2nd paragraph)

Since the nearest residence is located west northwest of the IIFP site at a distance of approximately 2.6 km (1.6 mi), the resultant sound level exposure will be below the perception of the human ear. This is because a noise source over such a distance will be dispersed in air and absorbed by natural landscape, vegetation, and buildings to the point of being masked by background ambient noise at the receptor. Noise impacts from the integrated Phase 2 operation of the IIFP Facility are anticipated to be SMALL.

~~4.7.4.1~~**4.7.6.1 Impacts to the Community** (Revised 2nd paragraph.)

Potential impacts to local schools, churches, hospitals, and residences are not expected to be significant, as supported by the information presented in ER Sections 4.7.1, 4.7.2 and 4.7.3. The nearest ~~ranch~~ residence is located west northeast~~west~~ of the site at a distance of approximately ~~8.5~~2.6 km (~~5.3~~1.6 mi) and due to its proximity is not expected to perceive an increase in noise levels due to construction or operations. The nearest school, hospital, church and other sensitive noise receptors are beyond this distance, thereby allowing the noise to dissipate and be absorbed, helping decrease the sound levels even further. Xcel Energy Cunningham Station is located on NM 483 and Colorado Energy Station is located east northeast of the site. Xcel Energy Maddox Station is located east of the facility. DCP Midstream gas processing facility is located southeast of the facility. At the Arkansas Junction, t~~T~~here are ~~no~~ two homes and a café located ~~near~~ 2.9 km (1.8 mi) ~~past the construction traffic off NM 483 nor at the intersection of U.S. 62/180 and NM 483~~ from the site to be affected by the vehicle noise; but due to existing heavy tractor trailer vehicle traffic, the change will be minimal. No schools or hospitals are located at this intersection.

~~4.9.4.2~~4.9.8.2 **Structure Obstructing Existing Views** (Revised section.)

The tallest proposed on-site building is projected to be approximately 21.3 m (70 ft). However, relatively small-diameter emission stacks will be approximately 30.5 m (100 ft) tall. Due to the relative flatness of the site and vicinity, the structures will be observable from U.S. 62/180 and NM 483 and from the nearest neighbor at approximately 2.6~~8.5~~ km (1.6~~5.3~~ mi) from the site. The IIFP buildings will partially obstruct views of existing landscape. However, considering that there are no high quality viewing areas (see ER Section 3.9.7, "High Quality View Areas") and the many existing, manmade structures (pump jacks, high power lines, industrial buildings, above-ground tanks) near the IIFP F~~f~~acility, the obstruction of existing views due to proposed structures will not degrade current conditions. (Refer to ER Figures in Section 3.9.2.)

4.12.2.2 **Site Operations of the IIFP Facility** (text moved with new Section heading, revised paragraph 7 of this new section)

Discharges of gaseous effluent from the scrubbing systems from the DUF_4 and FEP processes, and the dust collector scrubbers are from the middle of the 16.2-ha (40-ac~~re~~) Site. Airborne concentrations of uranium present in gaseous effluent continually decrease with distance from the release point. Therefore, the greatest off-site radiological impacts are expected at or near the site boundaries. The nearest known resident has been identified at a distance of approximately 2.6~~8.5~~ km (1.6~~5.3~~ mi) ~~northeast~~ west northwest of the site. The nearest businesses include Colorado Energy Hobbs Generating Station at a distance of 3.1~~2~~ km (~~1.1~~1.9 mi) ENE of the site, Xcel Energy Cunningham Station at a distance of 1.6~~2~~ km (1.~~3~~0 mi) ~~WSW~~ west of the site, and Xcel Energy Maddox Station is 3.5~~4~~ km (2.2 mi) ESE of the site. ~~Xcel Energy Cunningham Station on the west sector.~~ A natural gas processing station, DCP Midstream, is located ~~6~~5.8 km (3.6 mi) southeast of the IIFP buildings. No other important receptor locations such as schools, hospitals, etc., have been identified within an 8-km (5-mi) radius of the IIFP site (refer to ER Section 3.10). With respect to ingestion pathways, there is little in the way of food crops grown within an 8-km (5-mi) radius due to semi-arid nature and minimal development of the local area for agriculture. Cattle grazing across the open range has been observed in the vicinity of the site. The radiological impacts on members of the public and the environment at these potential receptor locations are expected to be only small fractions of the radiological impacts that have been estimated for the site boundary locations because of the low concentrations in gaseous effluent and the high degree of dispersion that takes place as the gaseous effluent is transported.

5.1.7 Noise (Revised section.)

The potential impacts related to noise generated during the preconstruction ~~licensing~~ and general construction, operation, and decommissioning by the facility have been characterized in **ER** Section 4.7, "Noise Impacts." SMALL impacts exist as related to the following activities:

- Traffic noise;
- Predicted noise levels at surrounding industrial facilities; and
- Impacts to sensitive receptors (i.e., residences and wildlife).

Noise levels will increase during the construction ~~phases~~ stages and due to operation of the IIFP plant, but not to a level that will cause significant impact to nearby sensitive receptors. The nearest residence is approximately 2.6~~8.5~~ km (1.6~~5.3~~ mi) from the site. Mitigation measures associated with noise impacts are listed in **ER** Section 5.2.7, "Noise."

5.2.7 Noise (Revised 1st paragraph.)

Noise from construction activities will have the highest sounds levels, but the nearest home is located approximately 2.68.5 km (1.65.3 mi) from the site. Due to this distance, those residents will not perceive an increase in noise levels. There are no sensitive receptors (hospitals, or schools, residences) located near to the intersection of U.S. 62/180 and NM 483 at Arkansas Junction who would have been the most aware of the increase in traffic due to proximity to the source. However for mitigation measures, heavy truck and earth moving equipment usage will be restricted after twilight and during early morning hours. Noise suppression systems on construction vehicles will be kept in proper operation.

8.3.7 Noise Impacts (Revised 2nd, 5th, and 6th paragraph.)

The predicted noise level ranges from the construction of the IIFP Ffacility fall within acceptable sound pressure levels as determined by the U.S. Department of Housing and Urban Development. U.S. 62/180 is a main trucking thoroughfare for local industry on the south boundary and that there are no other sensitive receptors at the IIFP south boundary. In addition, noise levels in the predicted ranges at the south boundary and the west boundary would only be for a short duration and only during construction of the facilities. Xcel Energy Cunningham Generating Station is located on NM 483 on the western boundary of the IIFP Ssite, while Xcel Energy Maddox Generation Station and Colorado Energy Hobbs Generatingon Station are located east and east northeast of the site, respectively. The DCP Midstream Linam Ranch Plant gas facility is located on U.S. 62/180 southeast of the IIFP Ssite. Due to the temporary and episodic nature of construction, and because of the significant distance to the nearest residence approximately 2.68.5 km (1.65.3 mi) to the west northwesteast of the site, and since construction activities largely would be during weekday daylight hours, actual construction noise at the site is not expected to have a significant effect on nearby residents.

Since the nearest known residence is located west northwesteast of the IIFP Ssite at a distance of approximately 2.68.5 km (1.65.3 mi), the resultant sound level exposure will be below the perception of the human ear. This is because a noise source over such a great distance will be dispersed in air and absorbed by natural landscape, vegetation, and buildings to the point of being masked by background ambient noise at the receptor.

For operational noise exposure to the nearest residence located west northwesteast of the IIFP Ssite at a distance of approximately 2.68.5 km (1.65.3 mi), the resultant sound level exposure would will generally be below the perception of the human ear. Certain phases of operation, weather, time of day, wind direction, traffic patterns, season, and the location of the receptor will all impact perceived operational noise levels. Although the noise from the plant facility and the additional traffic would generally be noticeable, the operational noise is not expected to have a significant impact on nearby traffic or the surrounding industries. Thus, noise impacts from the operation of the IIFP Ffacility are SMALL.

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NON-RADIOLOGICAL EMISSIONS AND IMPACTS FOR PHASE 1 AND PHASE 2 CONSTRUCTION ACTIVITIES

1.0 Introduction

The International Isotopes Fluorine Products (IIFP) project seeks to construct and operate a facility that will (1) convert depleted uranium hexafluoride (DUF_6) to uranium oxide and (2) produce marketable fluorine chemicals. IIFP must obtain a license from the Nuclear Regulatory Commission (NRC) prior to the start of construction. The license application to the NRC includes an Environmental Report (ER). This calculation is prepared in support of the ER as part of the license application to the NRC.

The IIFP Project will be implemented in two separate phases. Phase 1 will include initial site preparation activities, road and infrastructure construction, construction of support facilities, and construction of several process buildings. Phase 2, which will include the construction of additional process buildings, will be performed after Phase 1 is completed and has already begun operations.

2.0 Purpose

The purpose of this report is to quantify the non-radiological emissions attributable to IIFP construction activities and to evaluate the impacts for comparison with regulatory standards.

3.0 Pollutants Generated By Construction

Site preparation and construction activities would generate criteria pollutants, hazardous air pollutants (HAPs), and volatile organic compounds (VOCs). The criteria pollutants are carbon monoxide (CO), nitrogen dioxide (NO_2), lead (Pb), ozone (O3), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and sulfur dioxide (SO_2) (40 CFR 40). HAPs are compounds that are believed to cause serious adverse health effects or adverse environmental effects. There are 188 pollutants designated as HAPs by the EPA. HAPs are generated by industrial processes and fossil fuel combustion. VOCs are organic compounds of carbon that participate in atmospheric photochemical reactions (carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate are excluded). VOCs are primarily generated by solvents, industrial processes, and fossil fuel combustion.

4.0 Regulations

The Environmental Protection Agency has established National Ambient Air Quality Standard (NAAQS) for criteria pollutants. The NAAQS do not limit release quantities, but instead establish maximum allowable pollutant concentrations in the ambient air. Ambient air pollutant concentrations are generally measured in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Relevant NAAQS are illustrated below in Table 4.1 (40 CFR 50). The NAAQS for lead and ozone are omitted because these pollutants will not be generated by site preparation or construction activities.

HAPs are regulated by the EPA under 40 CFR 61, *National Emission Standards for Hazardous Air Pollutants*. Unlike the criteria pollutants, there are no ambient air concentration limits for HAPs. Instead, HAPs are regulated through source controls. VOC emission levels are regulated by air permit programs.

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5.0 Emission Sources

Pollutants attributable to construction would include (1) tailpipe emissions (also known as combustion emissions) from operation of diesel-fired equipment (2) fugitive dust emissions ($PM_{2.5}$ and PM_{10}) from unpaved surfaces generated by wind erosion, soil or powder transfers, and the travel of heavy

Table 4.1 NAAQS

Criteria Pollutant	Average	Maximum Concentration ($\mu g/m^3$)	Conditions
CO	1-hr	10,000	Not to be exceeded more than once per year
	8-hr	40,000	Not to be exceeded more than once per year
NO_2	1-hr	188	NA
	Annual	100	Annual arithmetic average.
$PM_{2.5}$	24-hr	35	To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 $\mu g/m^3$ (effective December 17, 2006).
	Annual	15	To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 $\mu g/m^3$
PM_{10}	24-hr	150	Not to be exceeded more than once per year on average over 3 years
SO_2	1-hr	200	NA
	3-hr	1,300	Not to be exceeded more than once per year
	24-hr	365	Not to be exceeded more than once per year
	Annual	80	To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.075 ppm

Source: 40 CFR 50

construction equipment and (3) fugitive HAP emissions due to evaporative losses from diesel fuel tanks and diesel fuel transfers. Separate calculations are applied to estimate these emissions.

6.0 Construction Area

Unlike an emissions stack, which is considered a point emission source, construction emissions will originate as an area source. The dimensions of the 40 acre site are roughly 358 meters by 457 meters. Area emissions for Phase 1 construction activities are based on 60 percent of the 40 acre area. Area emissions for Phase 2 are based on 60 percent of a 1 acre area.

7.0 Tailpipe Emissions

EPA Report NR-009d describes pollutant emission factors for calculation of emissions attributable to operation of non-road compression engine equipment (i.e., diesel-fired construction equipment). Emission factors (grams of pollutant per horsepower-hour) are primarily a function equipment horsepower, load factor, and age. Report NR-009d also identifies equipment fuel consumption factors in units of "grams of

fuel burned per horsepower-hour." Small equipment tends to have larger emission factors than large equipment (EPA, 2010).

To calculate the peak annual tailpipe emissions for construction, a list of site preparation and construction equipment was identified. For each month of the year, the quantity and average monthly hours of operation for each equipment item was estimated. Based on the equipment horsepower, load factor,

equipment quantities, hours of operation, and pollutant emission factors, the total monthly emissions for each pollutant and each equipment item are calculated by Equation 01.

Tailpipe Emissions, $g/s/m^2$ =	(Emissions Factor, g/hp-hr) × (horsepower, hp) × (load factor) × (equipment quantity, each) × (hours operated, hrs)	[EQN_01]

8.0 Fugitive Dust Emissions

Fugitive dust is solid particulate matter emitted from any source other than a stack or chimney. Fugitive dust particulates occur over a wide range of particulate sizes. The term total suspended particulate (TSP) describes the entire range of fugitive particulate emissions (all particle sizes). For initial site preparation activities, EPA AP-42, Section 13.2.3.3, cites a TSP emission factor of 1.2 tons/acre/month (EPA 1995). After site preparation activities have been completed, it is assumed that fugitive TSP emissions would drop to 0.3 tons/acre/month. On average, PM_{10} and $PM_{2.5}$ represent 15 percent and 7.5 percent of TSP fugitive dust emissions (MRI 2006). For the purpose of evaluation, fugitive dust emissions are assumed to occur over 60 percent of the total construction site at any given time.

9.0 Fugitive Hap Emissions

Fugitive HAP emissions are generated by evaporative losses from diesel storage tanks and diesel fuel transfer operations. The total annual HAP fugitive emissions are calculated as a product of the diesel consumption factors from AP-42, and an HAP fugitive emission rate of 0.000028 lb fugitive HAPs per lb diesel (SBAP 2010).

10.0 Combined Emissions

Annual pollutant emission totals (tailpipe emissions + fugitive dust emissions + fugitive HAP emissions) are summed and reported in the Environmental Report. Annual pollutant emission totals form the basis for calculation of the average emission rate for input to SCREEN3. Similarly, monthly maximum criteria pollutant emissions are summed, and the maximum sum is selected to calculate time-averaged area emission rates for input to SCREEN3 (this is described further in Section 12).

11.0 Site-Specific Meteorology

Representative regional meteorological data was applied to determine regional air-quality impacts attributable to IIFP construction activities. The data, provided by the State of New Mexico, includes 9408 hourly records that indicate the atmospheric stability and the direction speed of the wind. Because construction activities would occur only in daylight hours, hourly records that occur at night were ignored. The stability class / wind speed combinations illustrated in Table 11-1 represent more than 97 percent of all day time records for the southeastern New Mexico region.

12.0 Screen3

The SCREEN3 computer program is applied to estimate maximum regional criteria pollutant concentrations attributable to area source construction emissions (i.e., air quality impacts). Air quality impacts are not evaluated for HAPs or VOCs because there are no regulatory metrics for comparison (HAP and VOC emissions are regulated by source controls and permit requirements). SCREEN3 calculates the one-hour average concentration for a range of downwind distances. Key inputs include the pollutant emission rate ($g/s/m^3$), release height (m), receptor height (m), stability class, and wind speed (m/s). All construction emissions are conservatively assumed to originate at ground level.

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Table 11-1 Regional Daytime Atmospheric Conditions and Occurrence Frequency

Stability Class and Wind Speed	Daytime Occurrence Frequency
D02	2.95%
D03	9.00%
D04	9.50%
D05	12.15%
D06	11.78%
D07	7.25%
D08	4.06%
D09	2.37%
D10	1.24%
D11	0.62%
E01	0.45%
E02	2.63%
E03	5.86%
E04	13.11%
E05	7.04%
F01	1.95%
F02	4.73%
F03	1.28%

Source: NMED 1998

For ground level releases, SCREEN3 results are scalable. Therefore, SCREEN3 is applied to determine downwind pollutant concentrations based on a unit release rate of 1 g/s/m^2. SCREEN3 results are obtained for each of the stability class and wind speed combinations shown in Table 13-1. SCREEN3 results for each receptor location are then frequency weighted and the average is selected to represent the concentration.

Table 13-1 SCREEN3 Scale Factors

Time Average	Multiply SCREEN3 Result By
1-hr	1.00
3-hr	0.90
8-hr	0.70
24-hr	0.40
8,760-hr	0.08

Source: CDPHE 2005

SCREEN3 is designed to estimate impacts for steady releases. Because construction activities are performed only in day time hours and for no more than 208 hours per month, to estimate an average release rate for extended time spans, the area emission rates must be adjusted. One-hour, 3-hour, and 8-hour impacts do not need to be adjusted, because these time spans are smaller than the standard 10 hour construction day. The 24-hour and 8,760-hour (annual) impacts, however, must be adjusted to account for intermittent pollutant releases. Equations to determine area release rates as input to SCREEN3 are listed below:

Avg 1-hr Emission Rate, g/s/m^2 = (Monthly Emissions, lb) / (Construction Work Time, hrs) [EQN_02]

Avg 3-hr Emission Rate, g/s/m^2 = (Monthly Emissions, lb) / (Construction Work Time, hrs) [EQN_03]

Avg 8-hr Emission Rate, g/s/m^2 = (Monthly Emissions, lb) / (Construction Work Time, hrs) [EQN_04]

Avg 24-hr Emission Rate, g/s/m^2 = (10 / 24) x (Monthly Emissions, lb) / (Construction Work Time, hrs) [EQN_05]

Avg 8,760-hr Emission Rate, g/s/m^2 = (Annual Emissions, lb) / (8,760 hrs) [EQN_06]

13.0 Impact Calculations

Frequency-weighted results from SCREEN3 are scaled to determine 1-hour impacts. For example, to estimate the impact for a 1-hr concentration, SCREEN3 results are scaled based on the average 1-hr emission rates as determined by EQN_02. Similarly, to estimate the impacts based on 3-hr, 8-hr, 24-hr, and 8,760-hr average area release rates, SCREEN3 results are scaled based on the average emission rates as determined by EQN_03, EQN_04, EQN_05, EQN_06, respectively. It is important to remember that SCREEN3 will estimate only the 1-hr average concentration – it does not reveal the average concentration for other time spans, such as 3-hr, 8-hr, 24-hr, and 8,760-hr. However, EPA has identified a set of scale factors that may be applied to estimate the 3-hr, 8-hr, 24-hr, and 8760-hr average concentrations based on the 1-hr average concentration. Table 13-1 illustrates these scale factors. Additionally, an example is provided below to illustrate this process. Emissions and impacts are determined separately for Construction Phase 1 and Construction Phase 2.

Example: Assume the maximum monthly SO_2 emissions are 62 pounds; the annual SO_2 emissions are 511 pounds; construction occurs 208 hours per month; and the dimensions of the area with active construction at any given time are 274 meters by 354 meters (96,996 square meters). Further assume that based on the site-specific meteorology and a unit area release rate (1 g/s/m2), the frequency-weighted SCREEN3 result at 200 meters is 8.28E+05 μg/m^3. There are four NAAQS for SO_2 (1-hr, 3-hr, 8-hr, and 8,760-hr). Calculations are illustrated below to determine the project impact for comparison with each SO_2 NAAQS.

1-hr impact

As shown in Table 13-1, for a 1-hr impact, the SCREEN3 scale factor is 1.

Release Rate = { (62 lb) / (208 hr) / (96996 m^2) } × (453.59 g/lb) / (3600 s/hr) = 3.87E-7 g/s/m^2

1-hr average impact at 200 meters = (SF) × (SCREEN3 1-hr concentration) × (SO_2 1-hr Release Rate) / (Unit Release Rate)

1-hr average impact at 200 meters = (1) × (8.28E+05 μg/m^3) x (3.87E-7 g/s/m^2) / (1 g/s/m^2) = 0.32 μg/m^3

3-hr impact

As shown in Table 13-1, for a 1-hr impact, the SCREEN3 scale factor is 0.9. The average release rate over a three hour span is the same as the release rate for a one hour span.

Release Rate = { (62 lb) / (208 hr) / (96996 m^2) } × (453.59 g/lb) / (3600 s/hr) = 3.87E-7 g/s/m^2

3-hr average impact at 200 meters = (SF) × (SCREEN3 1-hr concentration) × (SO_2 3-hr Release Rate) / (Unit Release Rate)

3-hr average impact at 200 meters = (0.9) × (8.28E+05 $\mu g/m^3$) x (3.87E-7 $g/s/m^2$) / (1 $g/s/m^2$) = 0.29 $\mu g/m^3$

8-hr impact

As shown in Table 13-1, for a 1-hr impact, the SCREEN3 scale factor is 0.7. The average release rate over an 8-hour span is the same as the release rate for a one hour span.

8-hr Release Rate = { (62 lb) / (208 hr) / (96,996 m^2) } × (453.59 g/lb) / (3600 s/hr) = 3.87E-7 $g/s/m^2$

8-hr average impact at 200 meters = (SF) × (SCREEN3 1-hr concentration) × (SO_2 8-hr Release Rate) / (Unit Release Rate)

8-hr average impact at 200 meters = (0.7) × (8.28E+05 $\mu g/m^3$) x (3.87E-7 $g/s/m^2$) / (1 $g/s/m^2$) = 0.22 $\mu g/m^3$

8,760-hr impact

As shown in Table 13-1, for a 1-hr impact, the SCREEN3 scale factor is 0.08. The average release rate over an 8,760 hour span is determined based on annual release total and 8,760 hours.

Release Rate = { (511 lb) / (8760 hr) / (96996 m^2) } × (453.59 g/lb) / (3600 s/hr) = 7.57E-08 $g/s/m^2$

8,760-hr average impact at 200 meters = (SF) × (SCREEN3 1-hr concentration) × (SO_2 Annual Release Rate) / (Unit Release Rate)

8,760-hr average impact at 200 meters = (0.08) × (8.28E+05 $\mu g/m^3$) x (7.57E-08 $g/s/m^2$) / (1 $g/s/m^2$) = 0.005 $\mu g/m^3$

14.0 References

40 CFR 50	National Ambient Air Quality Standards
40 CFR 61	National Emission Standards for Hazardous Air Pollutants
	Available online at http://www.cdphe.state.co.us/ap/sbap/sbap_gasoline_guidance.pdf
CDPHE 2005	Colorado Department of Health and Environment, SCREEN3 Stationary Source Modeling Guidance.
EPA, 2010	EPA-420-R-10-018, NR-009d, Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition. July. Available online at http://www.epa.gov/oms/models/nonrdmdl/nonrdmdl2010/420r10018.pdf
MRI 2006	Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors.
NMED 1998	Air Quality Permit 126M4 for the ARCO Permian Empire Abo Gasoline Plant, March.
SBAP 2010	Colorado Department of Public Health and Environment. A Guide to Air Regulations for Gasoline and Diesel Fuel Dispenser Stations.