Enclosure 3 to E-54837

RAI Responses with associated application change pages

(Public Version)

Environmental Requests for Additional Information
Proposed Action (PA)

RAI PA-1

Provide additional information on the railroad side track to be built as part of the proposed CISF. This information should include:

- Clarification of the location (i.e., footprint) of the railroad side track. The location of the proposed railroad side track is not consistently depicted in figures in the Environmental Report (ER). For example, compare ER Figure 2.2-6 with ER Figure 4.5-1. Specifically, clarify whether the railroad side track would cross Stateline Road into New Mexico as depicted in ER Figure 4.5-1.
- The status of any Federal, State, or local permits or approvals that would be needed to construct and operate the railroad side track, as applicable both in Texas and
- New Mexico (as depicted in ER Figure 4.5-1, the railroad side track appears to be partly located in both states).
- A description of the materials, methods, and equipment that would be used to construct, operate, and maintain the railroad side track, including timing of the construction. If the side track would be decommissioned along with the CISF, include similar information for decommissioning.
- Local natural resources (e.g., groundwater, geologic materials) and manpower needed to construct and operate the railroad side track; and whether or not construction and
- operation workers for the railroad side track are already included in the resource impacts analysis in the ER (transportation, socioeconomics, etc.).
- The amount of land that would be disturbed by construction and operation of the railroad side track.
- The volume of soil that would be excavated during construction and potentially stockpiled during operation of the railroad side track and available information on the disposition of the stockpiled soil.
- An assessment of the environmental impacts that construction, operation, and decommissioning of the railroad side track would have on all resource areas (e.g., land use, transportation, geology and soils, water resources, air quality, ecological resources, historic and cultural resources, noise, visual and scenic, socioeconomics, public and occupational health, and waste management).
- Mitigation measures that would be implemented to reduce the environmental
- impacts associated with construction, operation, and decommissioning of the railroad side track on all resource areas.
- Any environmental measures, management plans, and/or monitoring that would be required during construction, operation, and decommissioning of the railroad side track to comply with any Federal, State, and local rules and regulations.

ER Section 2.2.2.5 states that an approximately 2,134 m [7,000 ft] railroad side track would be built adjacent to the existing railroad access loop for spent nuclear fuel (SNF) deliveries

to the proposed CISF. The ER provides limited information on the construction, operation, and decommissioning activities associated with the railroad side track. Specifically, additional information on the railroad side track is needed to support the NRC staff's description of the proposed action and evaluation of environmental impacts in the Environmental Impact Statement (EIS).

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which requires that the ER include a description of the proposed action and discuss the impacts of the proposed action.

Response to RAI PA-1:

Information on the railroad side track to be built as part of the proposed CISF is provided below:

- The railroad side track will be limited to Texas and will not cross stateline road into New Mexico. ER Figure 2.2-6 and the identical Figures 3.2-4 and 4.5-1 have been updated to be consistent with the side track layout. Additional figures have been updated to be consistent with the change. The affected figures are: ER Figures 2.2-6, 3.1-3, 3.2-4, 3.3-1, 3.6-1, 4.2-1 (deleted), 4.5-1, 4.12-1, 4.12-7, 4.12-8, 4.12-9, 4.12-10, 4.12-11, and 4.12-12 as well as SAR Figures 1-1, 1-2, 1-3, 2-1, 2-4, 2-15, 9-1, 9-2, and 9-6.
- As shown in the updated figures, the CISF railroad side track will be located entirely in Texas. No portion of the side track will cross State Line Road into New Mexico. The Track will be constructed to comply with 49 CFR Part 213, "Track Safety Standards," and will be maintained and inspected in accordance with Federal Railroad Administration (FRA) Class 1 Standards. There are no additional Federal, State, or local permits or approvals that would be needed to construct and operate the side track beyond than those associated with general construction of the CISF and as detailed in ISP response to RAI RRP-1. ER Section 2.2.2.5 has been updated to provide this information.
- The new railroad side track will be constructed using industry standard rail construction techniques. The profile of the track is relatively level (basically follows the existing grade) therefore excavation and embankment work are expected to be minimal and to only ensure correct grade and alignment of the rail. Construction of the railroad side track involves the following basic steps.

    1. Clearing the ground along the pathway of the track. A pathway with a width of approximately 40 feet will be necessary to build the rail. Pathway preparation work would potentially be performed using bulldozers.

    2. Subgrade soil is placed and compacted to provide suitable foundation for rail construction. Work would potentially be performed using bulldozers, haul trucks, motor graders, and compaction equipment.

    3. Sub-ballast (structural fill) is placed to provide further support of the rail. Thickness of sub-ballast will be determined when final design and construction of the railroad is performed but is typically around 12 inches thick. Work would potentially be performed using bulldozers, haul trucks, motor graders, and compaction equipment.

4. Ballast (graded rock/gravel) is placed and wood rail ties are placed. Thickness of the ballast will be determined with final design and construction of the railroad is performed, but is typically around 12 inches thick. Work would potentially be formed using haul trucks, ballast regulators, and ballast tamping machines.

5. Finally, steel rail is attached to the rail ties. Work would potentially be performed by fork-lift and crew labor.

Maintenance of the track consists of monthly inspections and re-gauging of track and replacement of damaged bolts, clips, and other standard components, which is typically completed by crew-labor.

Rail sidetrack construction will be performed as part of the initial CISF construction (Phase 1).

The decommissioning plan for the CISF includes characterization surveys that will be performed to verify that the storage pads, Cask Handing Building, and surrounding facilities are free from contamination. ISP does not anticipate contamination in or around these surrounding facilities. The Decommissioning Plan for the CISF includes a site survey and in the unlikely event of contamination, decontamination for surrounding facilities. The railroad side track is considered to be a "surrounding facility." The railroad sidetrack will be surveyed to verify it is not contaminated and then left in place.

- Local natural resources and manpower needed to construct and operate the railroad side track are included in the evaluation in Chapter 4 of the ER. ER Section 4.1 has been updated to indicate that the railroad side track is part of this evaluation and to be consistent with ISP Response to RAI LU-3.
- The amount of land that would be disturbed by construction and operation of the railroad side track is addressed in the ISP response to RAI LU-3. ER Sections 4.5.4, 4.5.5, 4.5.6, 4.5.7, 4.5.8, and 4.5.12 have been updated to be consistent with ISP Response to RAI LU-3.
- Total length of the new rail being constructed (inside and outside of the Owner Controlled Area (OCA)) is approximately 1.25 miles (6,600 feet). Rail will be placed at or near grade with minimal excavation needed to meet railroad grade requirements. Excavation activities will consist of removal of the top layer of soil containing vegetation and other deleterious material before placing the structural fill for the railroad tracks. Estimates for total soil excavation performed during construction of the railroad are 10,000 cubic yards. As noted in ISP Response to RAI LU-3, approximately a quarter of a mile of rail track extends outside of the OCA area, meaning that approximately 80% of the excavation required for the rail track will be completed as part of the site preparation performed for the CISF, and the remaining 2,000 cubic yards of excavation will be outside of the OCA boundary. Soil will be stockpiled at the existing Waste Control Specialists facility soil stockpiles to the northeast of the proposed CISF location. ER Sections 2.2.2.5, 2.3.4, 3.2.3, and 4.2.5 have been updated to reflect the revised total length and layout of new rail being constructed.

- The section of railroad sidetrack originally shown in New Mexico will no longer be constructed as part of the CISF. An assessment of the environmental impacts that construction, operation, and decommissioning of the railroad side track would have on all resource areas associated with the remaining railroad sidetrack is addressed in the ISP Response to RAI ECO-1.
- Mitigation measures that would be implemented to reduce the environmental impacts associated with construction, operation, and decommissioning of the railroad side track on resources in the area are implemented through required plans and permits by the Texas Commission on Environmental Quality (TCEQ). These include a Construction General Permit (CGP TXR150000), Stormwater Pollution Prevention Plan (SWPPP), and Spill Prevention, Control, and Countermeasures Plan (SPCC). In addition to these plans and permits, the Best Management Practices (BMPs) discussed in the ISP Response to RAI GS-1 will be implemented. In addition, ER Section 1.3.2.3 indicates that construction and operations activities at the CISF are not expected to have measurable impacts on local air quality. However, for a project of this size, a BMP Emissions Control Plan will be developed to manage and minimize fugitive dust emissions throughout the construction phases of the project.
- Environmental measures, management plans, and/or monitoring that would be required during construction, operation, and decommissioning of the railroad side track to comply with any Federal, State, and local rules and regulations are included in ISP Response to RAI RRP-1 and ER Section 1.3.

Impact:

ER Sections 2.2.2.5, 2.3.4, 3.2.3, 4.1, 4.2.5, 4.5.4, 4.5.5, 4.5.6, 4.5.7, 4.5.8, and 4.5.12, ER Figures 2.2-6, 3.1-3, 3.2-4, 3.3-1, 3.6-1, 4.5-1, 4.12-1, 4.12-7, 4.12-8, 4.12-9, 4.12-10, 4.12-11, and 4.12-12, and SAR Figures 1-1, 1-2, 1-3, 2-1, 2-4, 2-15, 9-1, 9-2, and 9-6 have been revised, as described in the response.

ER Figure 4.2-1 has been deleted as described in the response.

2.2.2.4 Security and Administration Building

The Security and Administration building is located along the west edge of the Protected Area. The western exterior wall of the building will be integral with the Protected Area fence. The single story building is divided into two major functions: security and administration. Included inside the security portion will be the surveillance and monitoring stations for the Central Alarm Station (CAS), access control, and the armory. Security personnel will monitor sensors and intrusion alarms, control employee access, process visitors into the CISF, and control rail and vehicle access to the CISF. The Administration portion of the building will contain offices for operations, maintenance, and material control personnel; administrative functions related to processing shipments; emergency equipment and operations; communication and tracking center/facility; training and visitor center; health physics area; records storage; conference room; break room; and restroom facilities. Health physics will have areas in this building for operation and storage equipment and accumulation of small quantities of LLRW in a waste management area. Building dimensions are approximately 10 m (32 feet) wide by 38 m (125 feet) long of enclosed space. Specific areas of the building which house the CAS and other essential functions will be constructed with ballistic materials. Adjacent to the building will be two outdoor covered areas. The first outdoor area is outside of the Protected Area and provides a covered entrance to the Access Control portion of the building for workers and visitors. The second outdoor covered area is inside the Protected Area and provides shelter for the emergency backup generators for the facility.

2.2.2.5 Railroad Side Track

The CISF would be built adjacent to the existing Waste Control Specialists railroad access loop. The new side track will consist of approximately *6,600* feet of track for SNF deliveries to the CISF. *The railroad side track connects to the existing WCS rail line in Texas. Figure 2.2-6 provides an overall layout and limit of the new side track. The new rail side track will be constructed using conventional methods to meet the standards of 49 CFR Part 213, "Track Safety Standards" and will be maintained and inspected in accordance with Federal Railroad Administration (FRA) Class 1 Standards. Standard maintenance of the rail track over the life of the facility consists of monthly inspections and upkeep. The rail side track will stay in place after decommissioning activities occur.*

All Indicated Changes are in response to RAI PA-1

CRITERION 8—OPERATIONAL LABOR FORCE

Operations labor force considerations for the Andrews County CISF operator would be virtually identical to those at a southeastern New Mexico CISF. Most CISF operations workers for the site in Andrews County will need to be degreed, technical, and highly trained workers hired from outside of the ROI or hired away from one of the nuclear–related facilities in the region for initial CISF operations. For long term hiring, major universities and other post-secondary schools are located in Midland-Odessa and Lubbock, while a local junior college in Hobbs is available to assist with training and qualification of workers. Given that the Andrews County site is in west Texas, where workers have not joined unions, the labor environment is favorable to multi-tasking of employees.

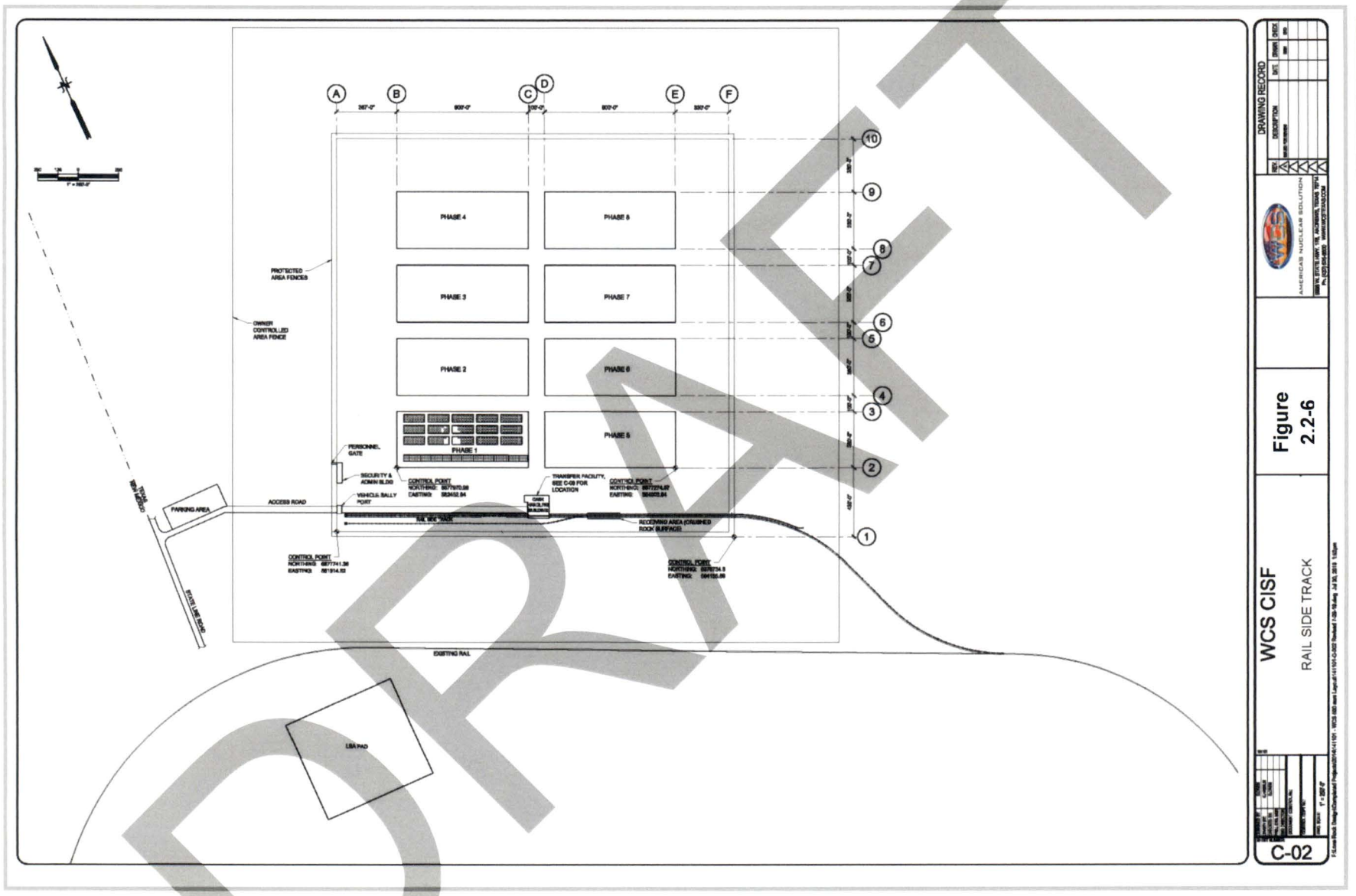
The Andrews County CISF operator has a staff of experienced radiation workers, radiation protection technicians, and health physicists it has established to create a stable organization of permanent resident employees. Additionally, ISP joint venture member Waste Control Specialists has worked many years to inculcate and mature a nuclear safety culture in operations, maintenance, technical support, and waste management personnel that will be highly advantageous during and at the start of CISF operations at the Andrews County CISF.

CRITERION 9—TRANSPORT ROUTES

A dedicated Waste Control Specialists–controlled rail loop encircles the Waste Control Specialists waste management facilities. The proposed CISF is to be built north of and adjacent to the existing Waste Control Specialists railroad access loop. ISP will have access to this rail loop for CISF purposes. A new side track will extend *northeast* to run east and west on the CISF Pad through the Cask Handling Building to provide for optimal and safe rail delivery of spent fuel and associated materials.

Texas State Highway 176, approximately 2 km (1.25 mi) south of the Andrews County site, provides for efficient movement of operations and construction traffic. Approximately 6 km (4 mi) to the west on Texas State Highway 176 is divided New Mexico Highway 18 in New Mexico; Interstate 20 is another 105 km (65 mi) south from there. Approximately 55 km (32 mi) to the east on Texas State Highway 176 is divided U.S. Highway 385; Interstate 20 at Odessa, Texas is another 68 km (42 mi) south from there.

All Indicated Changes are in response to RAI PA-1



All Indicated Changes are in response to RAI PA-1

transportation corridor represents the rail operated by the TNMR from Monahans, Texas to the CISF (Figure 3.2-3).

The TNMR recently upgraded the rail lines (Class 1) to accommodate heavier loads expected to be transported to Waste Control Specialists. The TNMR rail lines are sufficient to transport SNF to the proposed CISF.

3.2.3 Rail Spur to the Proposed CISF

ISP joint venture member Waste Control Specialists operates a rail track from Eunice, New Mexico that encircles its facilities in Andrews County, Texas. SNF would be transported along the transportation corridor from Monahans, Texas to Eunice, New Mexico. Waste Control Specialists would transport the SNF along its rail track via a locomotive to the Transfer Facility at the CISF.

ISP would construct a rail sidetrack, approximately *2* km (*1.25* mi) in length, from the existing rail spur leading into the *Cask Handling Building* at the CISF (Figure 3.2-4).

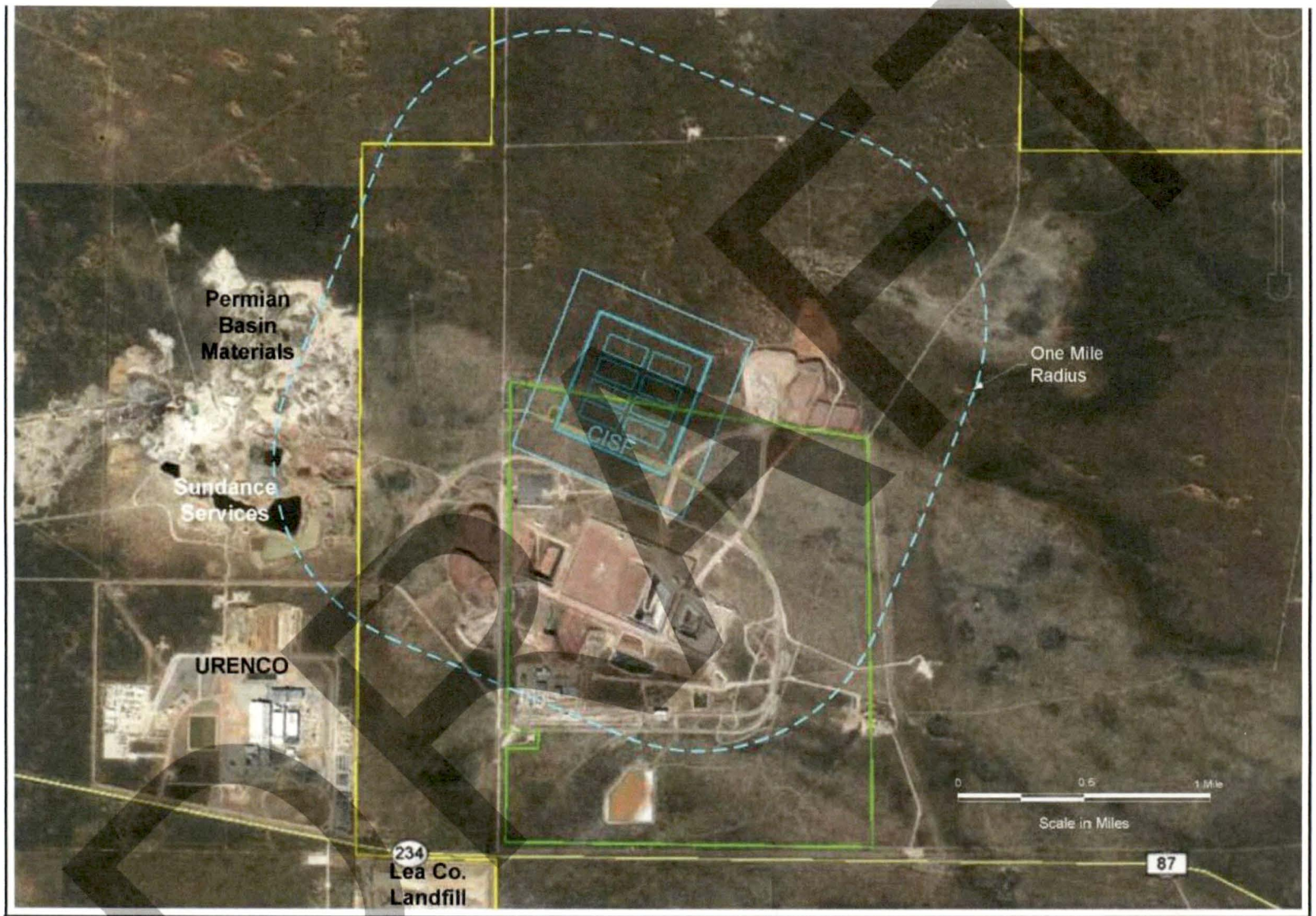
SNF would be receipt inspected prior to acceptance at the CISF. After acceptance, the dual-purpose canisters would be offloaded in compliance with requirements specified in the license.

3.3 GEOLOGY AND SOILS

This section identifies the geological, seismological, and geotechnical characteristics of the CISF and its vicinity.

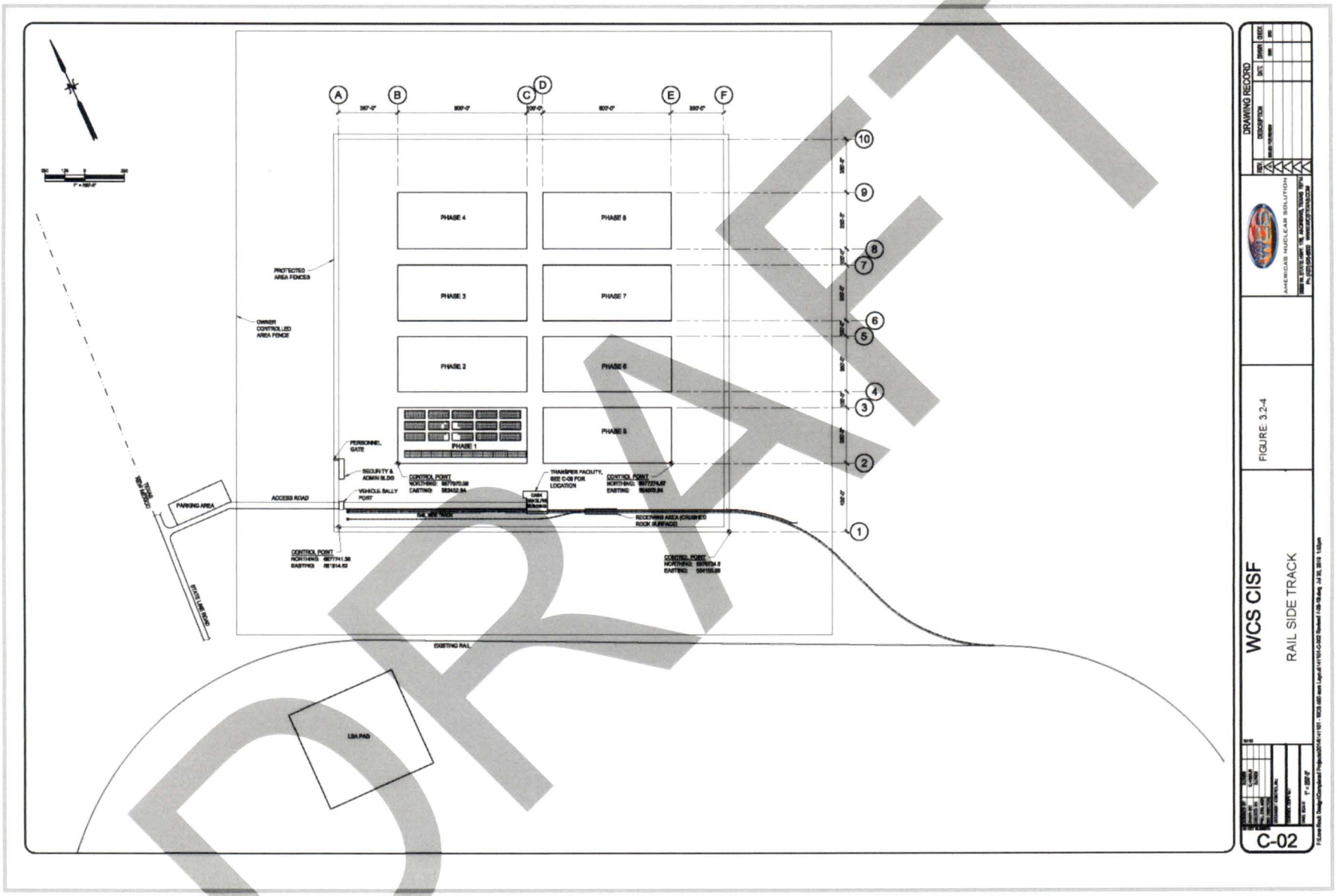
Some areas immediately adjacent to the proposed CISF have been thoroughly studied in recent years in preparation for construction of other facilities such as the Waste Control Specialists byproduct material (11e2) disposal unit, the Texas Compact LLRW disposal unit, the FWF unit, the radioactive waste storage and processing facility, the NEF in New Mexico, the International Isotopes, Inc. uranium hexafluoride de-conversion facility in New Mexico, and the former Atomic Vapor Laser Isotope Separation (AVLIS) site in New Mexico. Data are available from these investigations in the form of various reports (NEF, 2005) (DOE, 2013a). These documents and related materials provide a substantial database and description of geological conditions for the CISF.

All Indicated Changes are in response to RAI PA-1

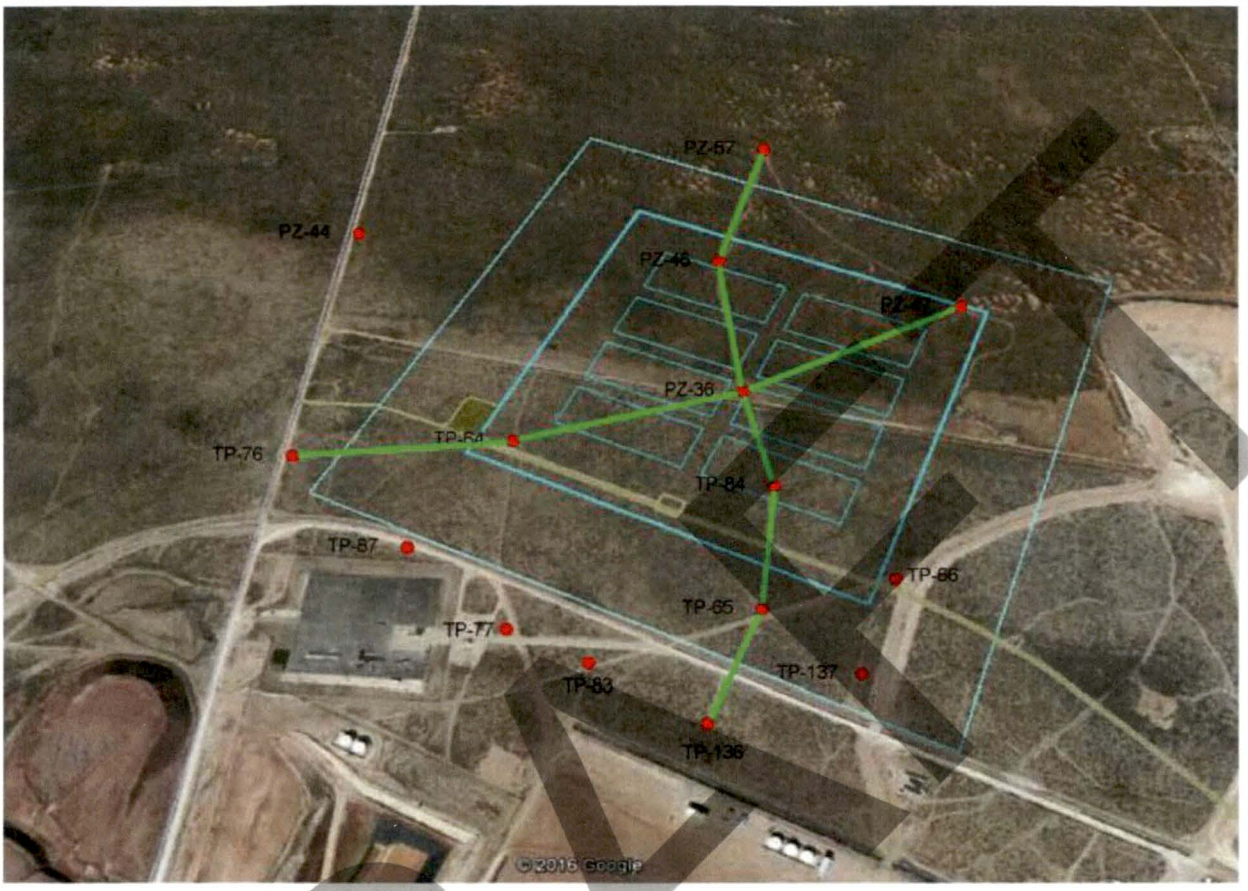


Title:	Figure:	Date:	
Proposed CISF 1-mile Radius	3.1-3	Feb 2016	
		Scale: Graphic	

All Indicated Changes are in response to RAI PA-1



All Indicated Changes are in response to RAI PA-1

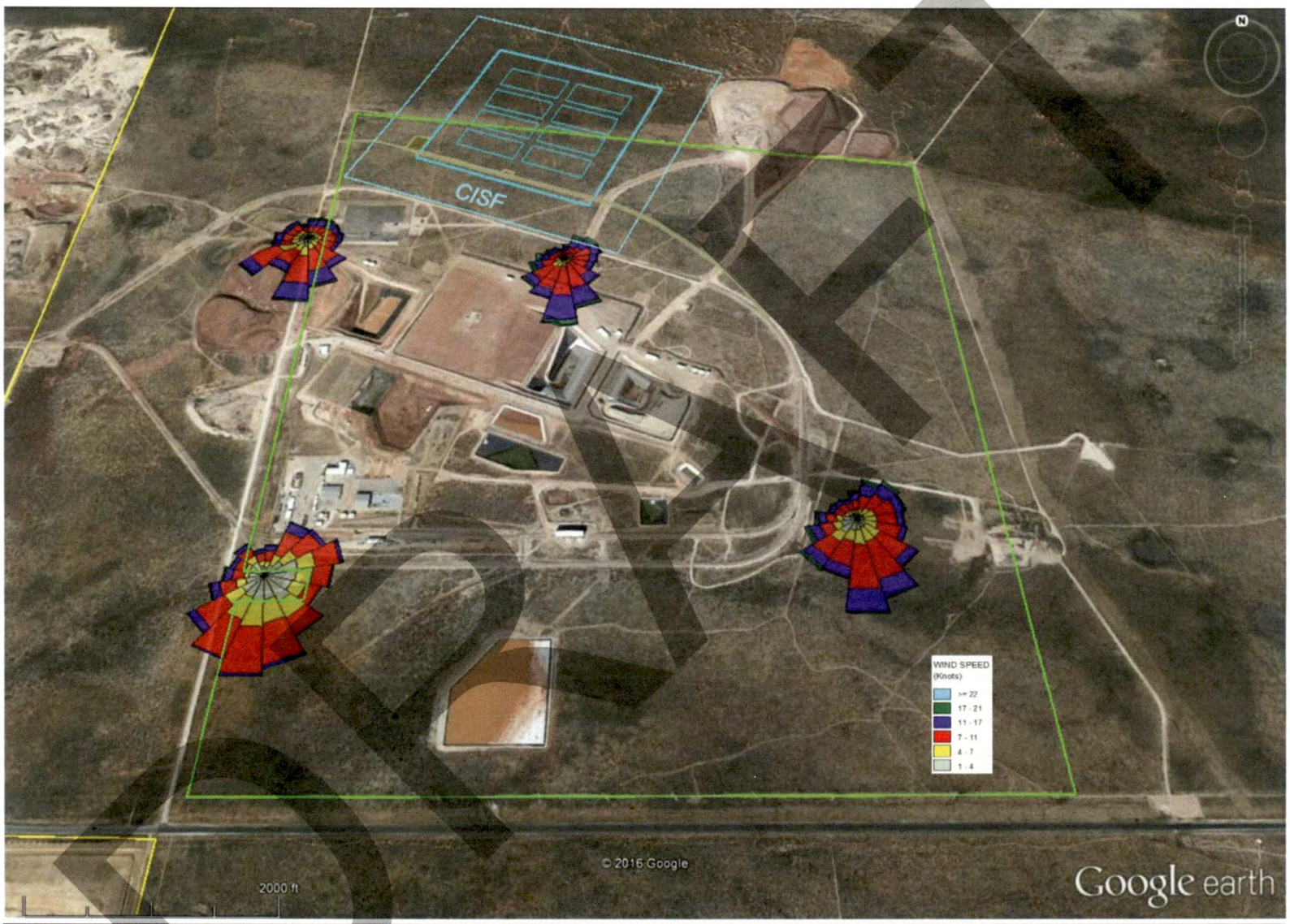


Monitoring Well/ Piezometer Name	Date Drilled/ Completed	Total Depth Well (ft btoc)	Bottom of Well Elevation (ft msl)	Ground Elevation (ft msl)	Top of Casing Elevation (ft msl)	Depth to Top of Red Beds (ft bgs)	Top of Red Bed Elevation (ft msl)
PZ-36	7/20/05	78.98	3419.51	3494.79	3498.49	75.0	3419.79
PZ-44	1/22/08	82.98	3416.90	3496.59	3499.88	77.1	3419.49
PZ-46	1/23/08	93.83	3412.04	3502.38	3505.87	87.4	3414.98
PZ-47	1/24/08	92.22	3411.56	3500.60	3503.78	87.0	3413.60
PZ-57	1/23/08	99.56	3415.44	3511.79	3515.00	93.5	3418.29
TP-64	1/11/08	70.81	3433.99	3502.08	3504.80	65.3	3436.78
TP-65	1/11/08	57.68	3436.07	3490.40	3493.75	52.5	3437.90
TP-66	1/10/08	57.78	3430.88	3485.45	3488.66	51.0	3434.45
TP-76	2/7/08	53.42	3436.78	3487.06	3490.20	47.1	3439.96
TP-77	2/7/08	51.30	3436.09	3484.19	3487.39	45.4	3438.79
TP-83	2/11/08	55.55	3435.60	3487.77	3491.15	49.8	3437.97
TP-84	2/12/08	65.24	3429.59	3491.56	3494.83	58.7	3432.86
TP-87	3/15/08	49.02	3438.47	3484.17	3487.49	43.3	3440.87
TP-136	3/20/09	55.21	3438.01	3490.17	3493.22	50.5	3439.67
TP-137	3/20/09	56.46	3434.68	3488.00	3491.14	51.5	3436.50

AMERICA'S NUCLEAR SOLUTION

Figure 3.3-1
Location of Cross-Sections

All Indicated Changes are in response to RAI PA-1



Title:	Date:	
Figure 3.6-1 Wind Rose Location Map	2/18/2016	AMERICAS NUCLEAR SOLUTION

All Indicated Changes are in response to RAI PA-1

CHAPTER 4

ENVIRONMENTAL IMPACTS

4.0 ENVIRONMENTAL IMPACTS

This chapter evaluates the potential environmental impacts associated with the construction, operation, and decommissioning of the proposed CISF. The chapter is divided into sections that assess the impact to each resource described in Chapter 3, Description of the Affected Area. These include land use (4.1), transportation (4.2), geology and soils (4.3), water resources (4.4), ecological resources (4.5), air quality (4.6), noise (4.7), historic and cultural resources (4.8), and visual and scenic resources (4.9), socioeconomics (4.10), environmental justice (4.11), public and occupational health (4.12), and waste management (4.13).

RAI PA-1

4.1 LAND USE IMPACTS

The proposed CISF would be built on land leased to Interim Storage Partners (ISP) by Waste Control Specialists LLC. The facility would be built in eight phases, with one phase being completed approximately every 2.5 years. Initial construction of Phase One would encompass approximately 63 ha (155 acres). Each phase would increase the overall footprint incrementally until the final footprint reaches approximately 130 ha (320 acres) with the completion of Phase Eight, of the owner controlled area. *In addition to the owner controlled area, there is an additional 0.6 ha (1.5 acres) of area for the new railroad side track which will be outside of the OCA and 1.2 ha (3 acres) of area for a new access road.* Because the site is currently undeveloped, potential land use impacts would primarily be from site preparation and construction activities. Approximately *1.6 ha (4 acres)* would be used for contractor parking and lay-down areas during facility construction. The total disturbed area would therefore be approximately *133.4 ha (330 acres)* including the contractor parking and lay-down area. The contractor lay-down and parking area would be restored after completion of facility construction.

During the construction phase of the CISF, conventional earthmoving and grading equipment would be used. *It is anticipated that excavation will be limited to the cover sands and Blackwater Draw caliche, however if hard caliche is encountered, heavy equipment with ripping tools may be utilized.* Soil removal work for foundations would be controlled to reduce over-excavation to minimize construction costs. In addition, loose soil and/or damaged caliche would be removed prior to installation of foundations for seismically designed structures.

RAI GS-2

4.2.4.1 Connected Transportation Impacts Associated with SNF Transport from Shutdown Decommissioned Reactors

Non-radiological environmental impacts connected to upgrades associated with the fabrication of new rail transport carriers and enhancements to rail infrastructure needed to remove SNF from the decommissioned reactors and transport to an ISFSI or geologic repository are discussed in a DOE report titled, *A Project Concept for Nuclear Fuels Storage and Transportation* (DOE, 2013a).

ISP anticipates initially receiving up to approximately 5,000 MTUs of SNF and related GTCC waste from decommissioned reactor sites at 12 locations across the U.S. As discussed in Section 3.2, heavy-haul trucks may be needed to move SNF over short distances from a decommissioned reactor site to a rail transfer facility. The NRC previously analyzed the environmental impacts associated with using heavy haul trucks to transport SNF from a rail transfer facility to an interim storage facility in NUREG-1714 (NRC, 2001). The distances analyzed in the NUREG-1714 report transporting are much greater than the distances between the shutdown decommissioned reactor sites and the rail transfer facilities. Thus, the environmental impacts analyzed in NUREG-1714 are bounding.

The radiological impacts potentially affecting members of the public along the three transportation routes have been analyzed and are described below. The radiological environmental impacts attributable to the transport of SNF from the decommissioned reactor sites are insignificant.

4.2.5 Transportation Impacts to Air and Water Quality

SNF received at the main rail line in Eunice, New Mexico operated by the TNMR, would be placed on the existing rail side track controlled by ISP joint venture member Waste Control Specialists and transported approximately 8 km (5 mi) to the CISF. ISP would construct an additional side track approximately 2 km (*1.25* mi) in length to allow the transport of SNF to the Cask Handling Building at the CISF as described in Section 3.2.

During construction, fugitive dust emissions are expected and are authorized under a "Permit By Rule" by the TCEQ. Transportation impacts to air quality include emissions from employee automobiles and the diesel locomotive used to transport SNF along the transportation corridor to the Cask Handling Facility at the CISF. Air quality would also be impacted from emissions of

4.5.4 Land Clearing and Area of Disturbance

The land to be cleared is the land within the CISF Owner Controlled Area as depicted in Figure 4.5-1. The total area of land to be disturbed is approximately *133.4 ha (330 acres)*. This area includes *1.6 ha (4 acres)* that will be used for contractor parking and lay-down areas. The ecological impacts of this land disturbance are expected to be small given the CISF area size, especially in relation to the vast amount of uninhabited and undisturbed land found throughout the region. The contractor lay-down and parking area will be restored after completion of plant construction. The CISF consists entirely of an upland area with no streams, ponds or other water environments to be cleared. There are no waste disposal areas present at the CISF.

4.5.5 Area of Disturbance by Habitat Type

The proposed CISF consists of one primary vegetation community type. The Plains-Mesa Sand Scrub vegetation community is identified by the dominant presence of deep sand tolerant and deep sand adapted plants. The Plains-Mesa Sand Scrub vegetation community is common in parts of the southeastern high plains. The density of specific plant species, quantified by individuals per acre, varies slightly across the proposed site. Differences in the composition of the vegetation community within the proposed site are accounted for by slight variations in soil texture and structure and small changes in aspect.

The Plains-Mesa Sand Scrub vegetation community is interrupted by a couple of access roads through the proposed CISF. These roads are devoid of vegetation. This area represents a small fraction of the total area and is not considered a habitat type. The majority of the proposed site is suitable for use by wildlife resources. The Plains-Mesa Sand Scrub provides potential habitat for an assortment of birds, mammals, and reptiles. The total area of disturbance proposed for the proposed CISF is approximately *133.4 ha (330 acres)* of the 5,668 ha (14,000 acres) ISP joint venture member Waste Control Specialists property. The disturbance would have a small impact on the Plains-Mesa Sand Scrub biota due to CISF construction, operations, and decommissioning.

All Indicated Changes are in response to RAI PA-1

4.5.6 Maintenance Practices

Roadway maintenance will be employed during the construction and operations and decommissioning of the CISF. However, because road maintenance is currently being employed along the existing access roads, this will not represent a substantial new impact to biota. The impacts to biota from maintenance practices during CISF construction, operations, and decommissioning will be small.

Maintenance practices, roadway maintenance, and clearing practices will be employed both during construction and plant operation. Herbicides may be used in limited amounts according to government regulations and manufacturer's instructions to control unwanted noxious vegetation during construction or operation of the facility. However, none of the practices are anticipated to permanently affect biota.

Brush clearing will be employed during construction of the CISF. The additional noise, dust, and other factors associated with the clearing will be short-lived in duration and will represent only a temporary impact to the biota of the CISF. Because *133.4 ha (330 acres)* in the owner controlled area of the 5,668 ha (14,000 acres) Waste Control Specialists property will be disturbed, biota will have an opportunity to move to undisturbed areas within the site as well as additional areas of suitable habitat bordering the site. Additionally, during operations, natural, low water consumption landscaping will be used and maintained.

4.5.7 Short Term Use Areas and Plans for Restoration

All areas to be used on a short-term basis during construction, including contractor parking and lay-down areas, will be limited to approximately *1.6 ha (4 acres)*. These areas will be re-vegetated with native plant species and other natural, low water consumption landscaping to control erosion upon completion of site construction and returned as close as possible to original conditions. Lay-down (short term use areas) will be selected to minimize the impacts to local vegetation and ensure that any adverse ecological impacts are as small as possible.

4.5.8 Activities Expected to Impact Sensitive Communities or Habitats

No communities or habitats that have been defined as rare or unique or that support threatened and endangered species have been identified on the CISF. Thus, proposed activities are not

All Indicated Changes are in response to RAI PA-1

expected to impact communities or habitats defined as rare or unique or that support threatened and endangered species within the *133.4 ha (330 acres)*.

Dune formations in combination with the Plains Sand Scrub vegetation community at the WCS CISF site have the potential to provide habitat for the sand dune lizard (*Sceloporus arenicolus*). Some dune formations are adjacent to the proposed area of disturbance. Surveys were conducted at the WCS CISF site in 2004 and at the NEF site in October 2003 and June 2004 to detect the presence of the sand dune lizard. No individuals were identified during the surveys and, although the area has some components of sand dune lizard habitat, various factors make it unsuitable. The closest known sand dune lizard population was approximately 4.8 km (3 mi) north of the NEF site. Areas to the west, south, and east of the site do not appear to have suitable habitat for the sand dune lizard within 16 to 32 km (10 to 20 mi).

In the general region of the CISF, there are several thousand acres of sand dune formation that would not be impacted by the project. Although black-tailed prairie dogs (*Cyonomys ludovicianus*) have expanded their range into shinnery oak and other grass-shrub habitats, they usually establish colonies in short grass vegetation types. The predominant vegetation type, Plains Sand Scrub, on the CISF is not optimal prairie dog habitat due to high-density shrubs. There have been no recorded sightings of black-tailed prairie dogs, active or inactive prairie dog mounds/burrows, or any other evidence, such as trimming of the various shrub species, at the CISF.

The Texas horned lizard is vulnerable to construction activities that could result in a direct loss of breeding habitat. Because the species has adapted to areas of human activities such as overgrazed pastures, plowed fields, and fencerows, it could potentially be present during the CISF operations phase. Decommissioning activities could have similar impacts on the lizard as the construction phase.

4.5.9 Impacts of Elevated Construction Equipment or Structures

The construction of new towers can create a potential impact on migratory birds, especially night-migrating species. Some of the species affected are also protected under the Endangered Species Act and the Bald and Golden Eagle Act. However, the estimate of the potential impacts of elevated construction equipment or structures on species is extremely low for the CISF.

RAI PA-1

4.5.12 Special Maintenance Practices Used in Important Habitats

No important habitats (e.g., marshes, natural areas, bogs) have been identified within the *133.4 ha (330 acres)* CISF. Therefore, no special maintenance practices are proposed.

4.5.13 Wildlife Management Practices

Several best management practices to limit or minimize impacts to existing wildlife habitat in association with the CISF will be included. These best management practices include:

- Use of design and BMPs to minimize the construction footprint to the extent possible
- Site stabilization practices to reduce the potential for erosion and sedimentation
- When possible, leave open areas undisturbed, including areas of native grasses and shrubs for the benefit of wildlife
- The use of native plant species to re-vegetate disturbed areas to enhance wildlife habitat

4.5.14 Practices and Procedures to Minimize Adverse Impacts

Several practices and procedures have been designed to minimize adverse impacts to the ecological resources of the proposed CISF. These practices and procedures include the use of BMPs, minimizing the construction footprint to the extent possible, avoiding all direct discharge (including storm water) to any waters of the U. S., the protection of all undisturbed naturalized areas, and site stabilization practices to reduce the potential for erosion and sedimentation. The use of native plant species to re-vegetate disturbed areas will enhance and maximize the opportunity for native wildlife habitat to be reestablished at the site.

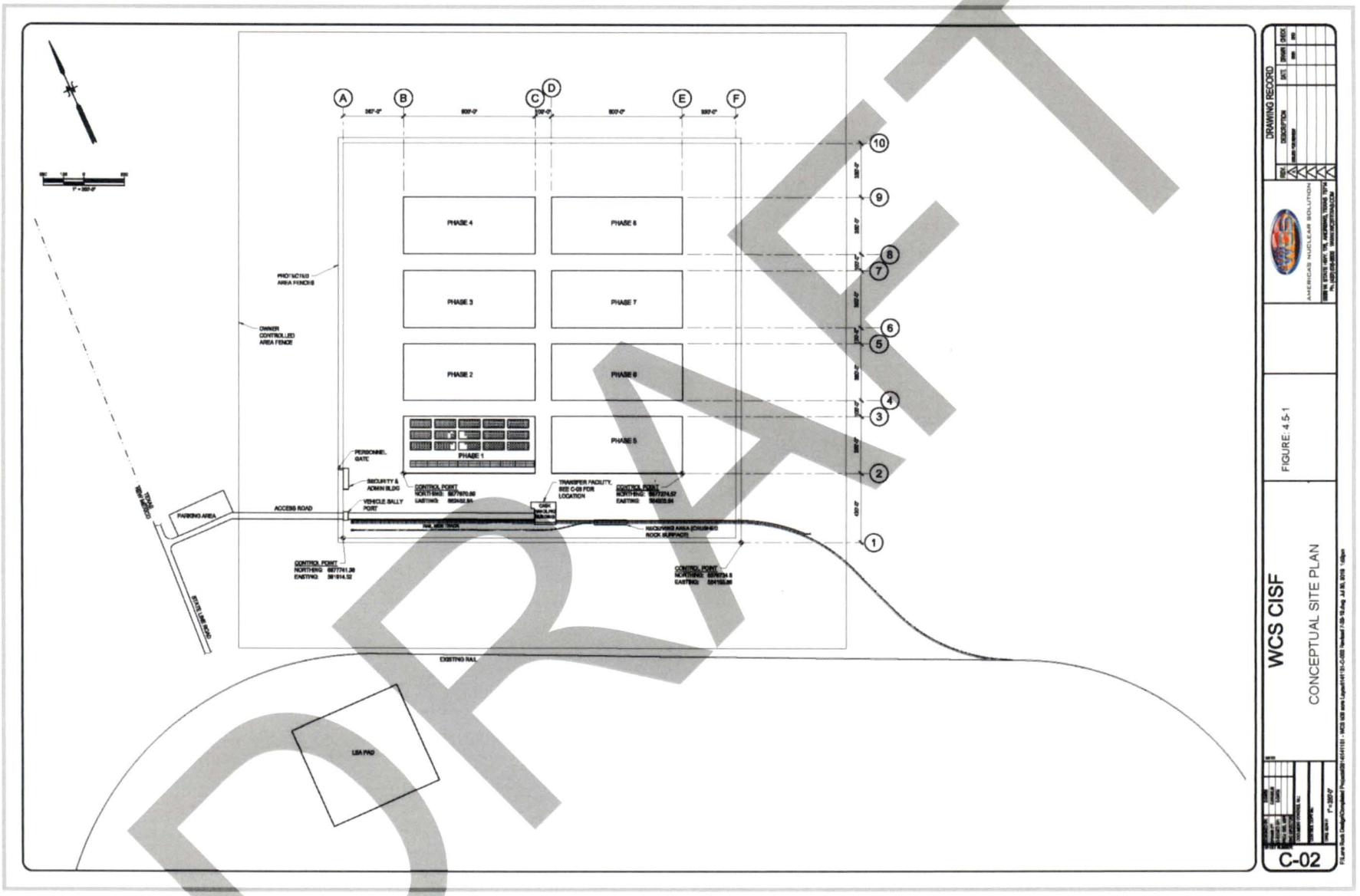
RAI AQ-4

4.6 AIR QUALITY IMPACTS

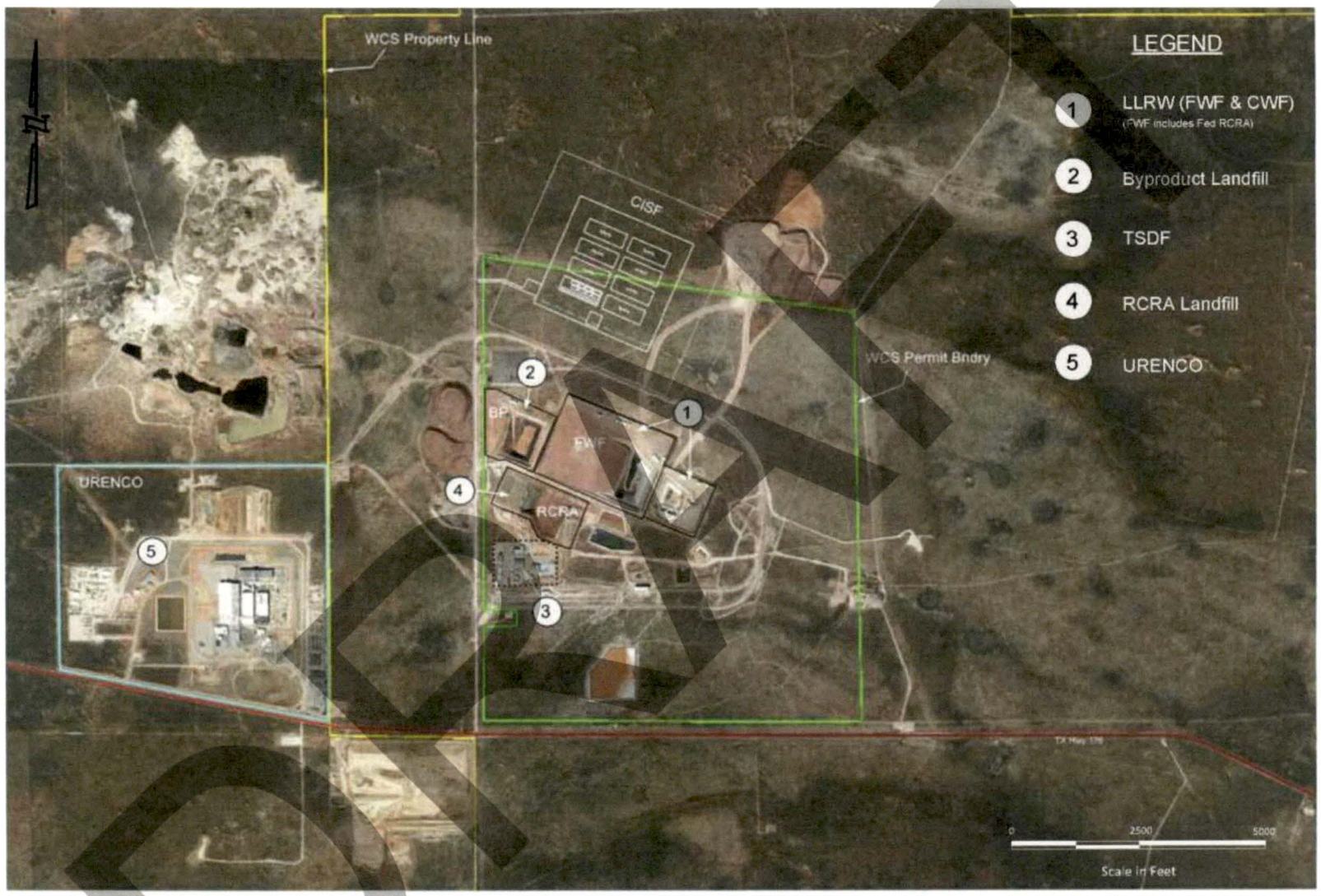
The greatest expected air quality impacts would be attributed to products of combustion from construction and earthmoving equipment and fugitive dust involved in site preparation and construction. Air quality impacts from construction site preparation for the proposed CISF were evaluated using AERMOD version 15181 to determine hourly impacts and emission rates quantified for these sources. Emission rates for products of combustion and fugitive dust were calculated using emission factors provided in AP-42, the EPA's Compilation of Air Pollutant Emission Factors (EPA, 1995), and the most recent emissions standards from the EPA with regard to on-road and non-road engines. Emission rates for construction activities were estimated for a 10-hour workday assuming peak construction activity levels were maintained for

Figure 4.2-1

Not Used



All Indicated Changes are in response to RAI PA-1



AMERICA'S NUCLEAR SOLUTION

Figure 4.12-1
Waste Control Specialists and facilities near the proposed Consolidated Interim Spent Fuel Storage Facility (CISF)

All Indicated Changes are in response to RAI PA-1

AMERICA'S NUCLEAR SOLUTION

Figure 4.12-7
Air monitoring locations (27 stations in 2014).

All Indicated Changes are in response to RAI PA-1

AMERICA'S NUCLEAR SOLUTION

Figure 4.12-8
225-ft Zone REMP groundwater monitoring locations (88 locations in 2014).

All Indicated Changes are in response to RAI PA-1

AMERICA'S NUCLEAR SOLUTION

Figure 4.12-9
Soil monitoring locations (17 locations in 2014).

All Indicated Changes are in response to RAI PA-1

AMERICA'S NUCLEAR SOLUTION

Figure 4.12-10
On-site Thermoluminescent dosimeters (TLDs) or Optically Stimulated Luminescent dosimeters (OSLs) monitoring locations (36 locations in 2014).

All Indicated Changes are in response to RAI PA-1

AMERICA'S NUCLEAR SOLUTION

Figure 4.12-11
Surface water monitoring locations (8 locations in 2014).

All Indicated Changes are in response to RAI PA-1

AMERICA'S NUCLEAR SOLUTION

Figure 4.12-12
Vegetation monitoring locations (15 locations in 2014).

All Indicated Changes are in response to RAI PA-1

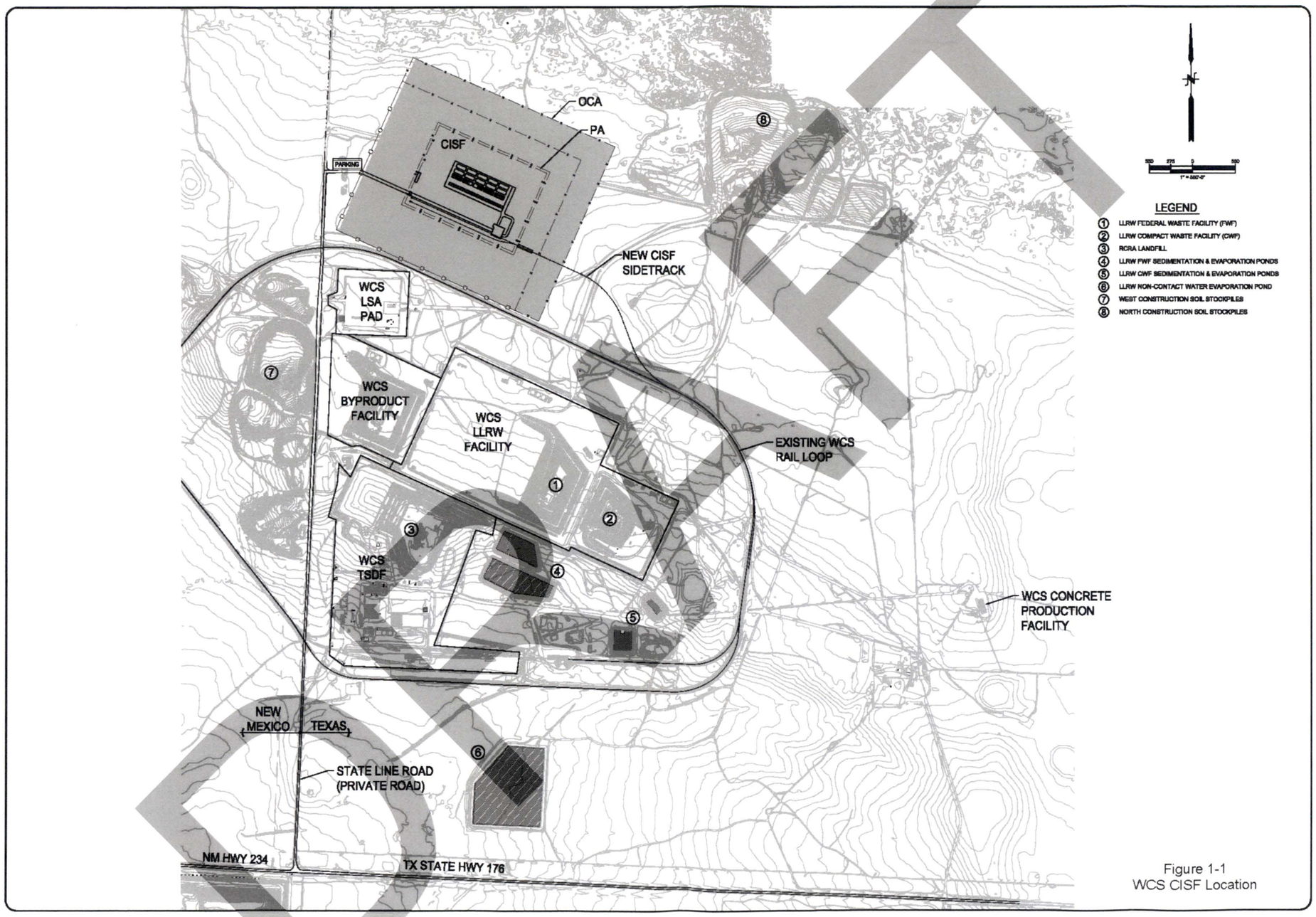


Figure 1-1
WCS CISF Location

All Indicated Changes are in response to RAI PA-1

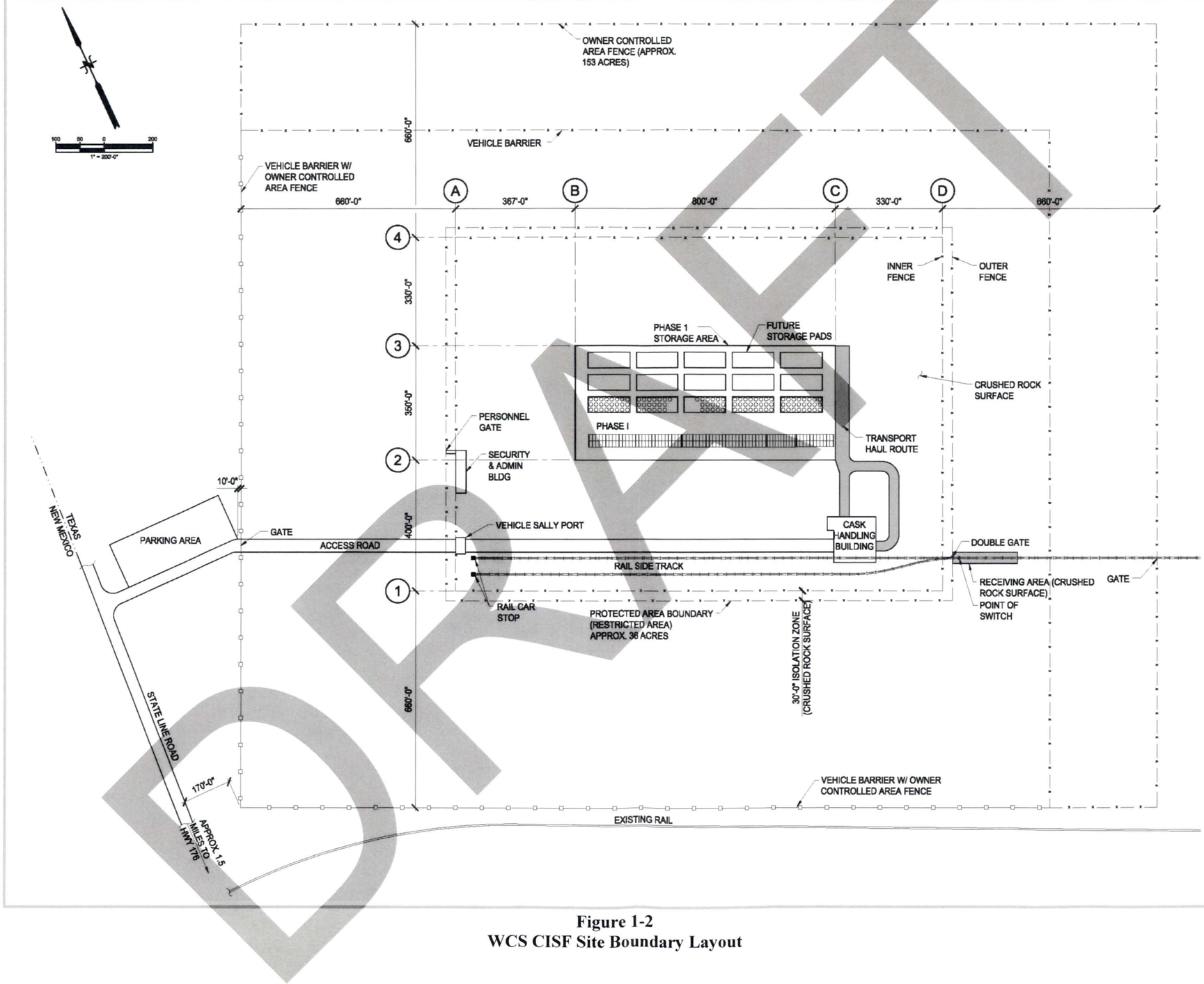


Figure 1-2
WCS CISF Site Boundary Layout

All Indicated Changes are in response to RAI PA-1

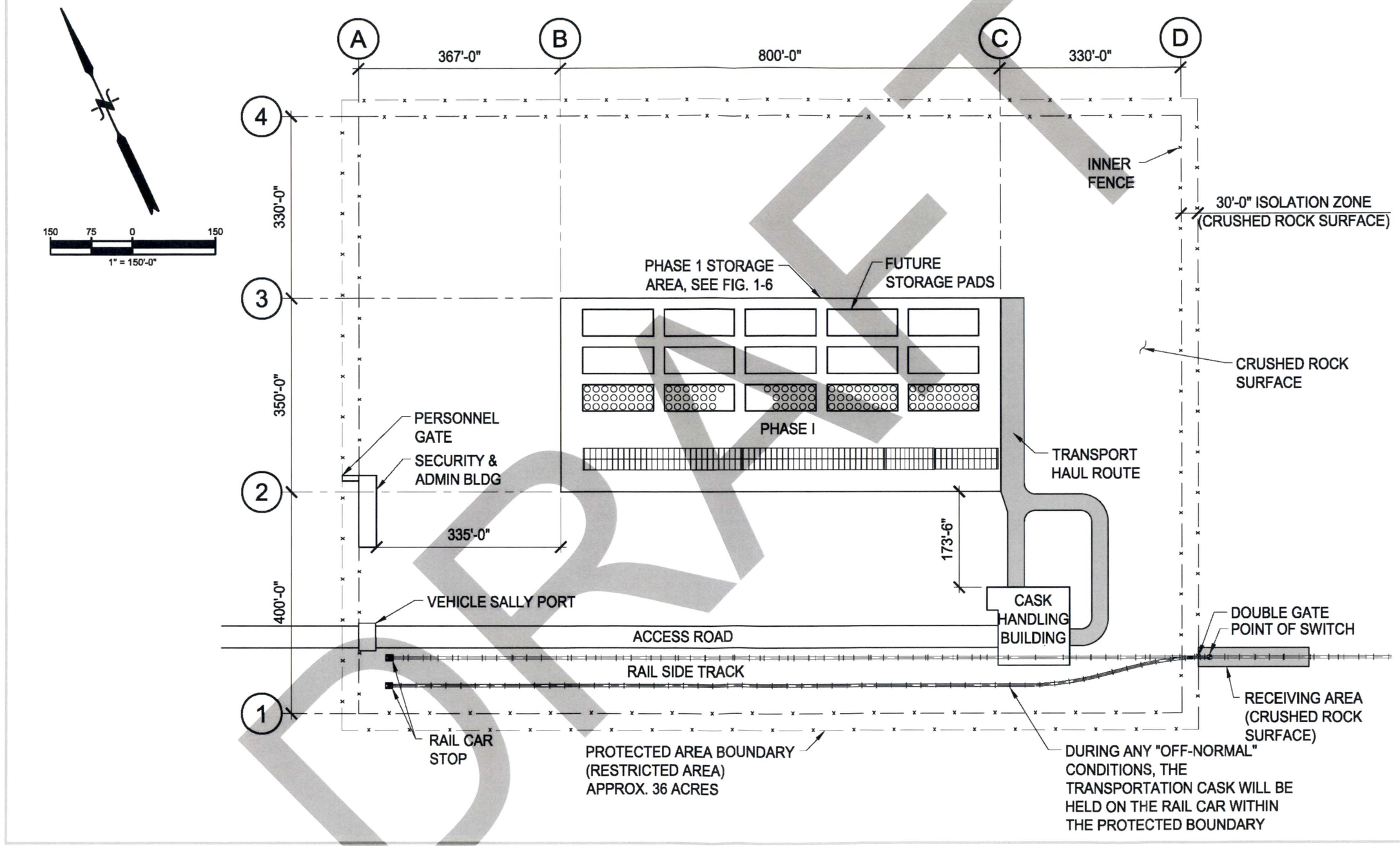


Figure 1-3
WCS CISF Site Overview

All Indicated Changes are in response to RAI PA-1

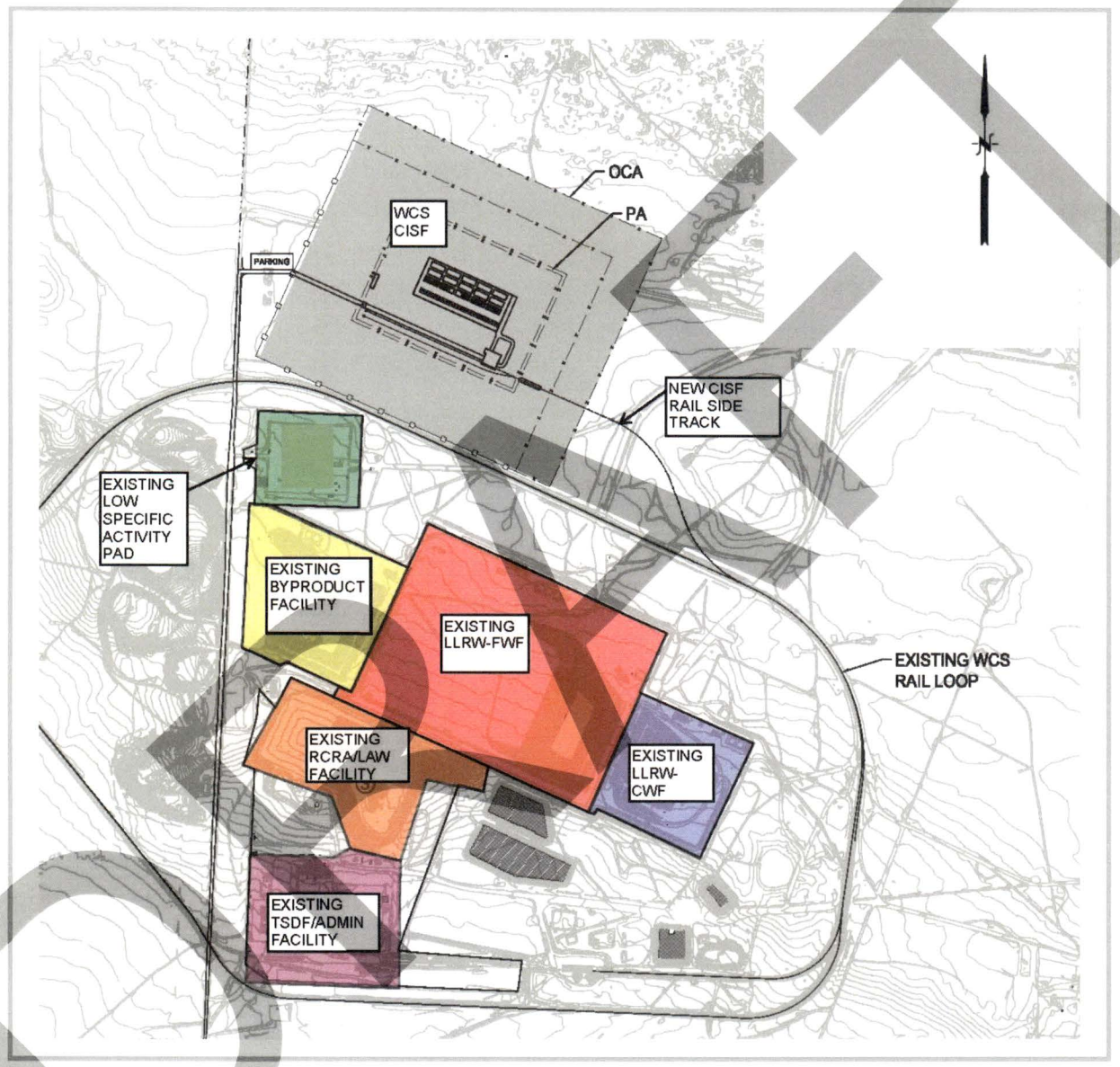


Figure 2-1
Waste Control Specialists Facility Site Plan

All Indicated Changes are in response to RAI PA-1

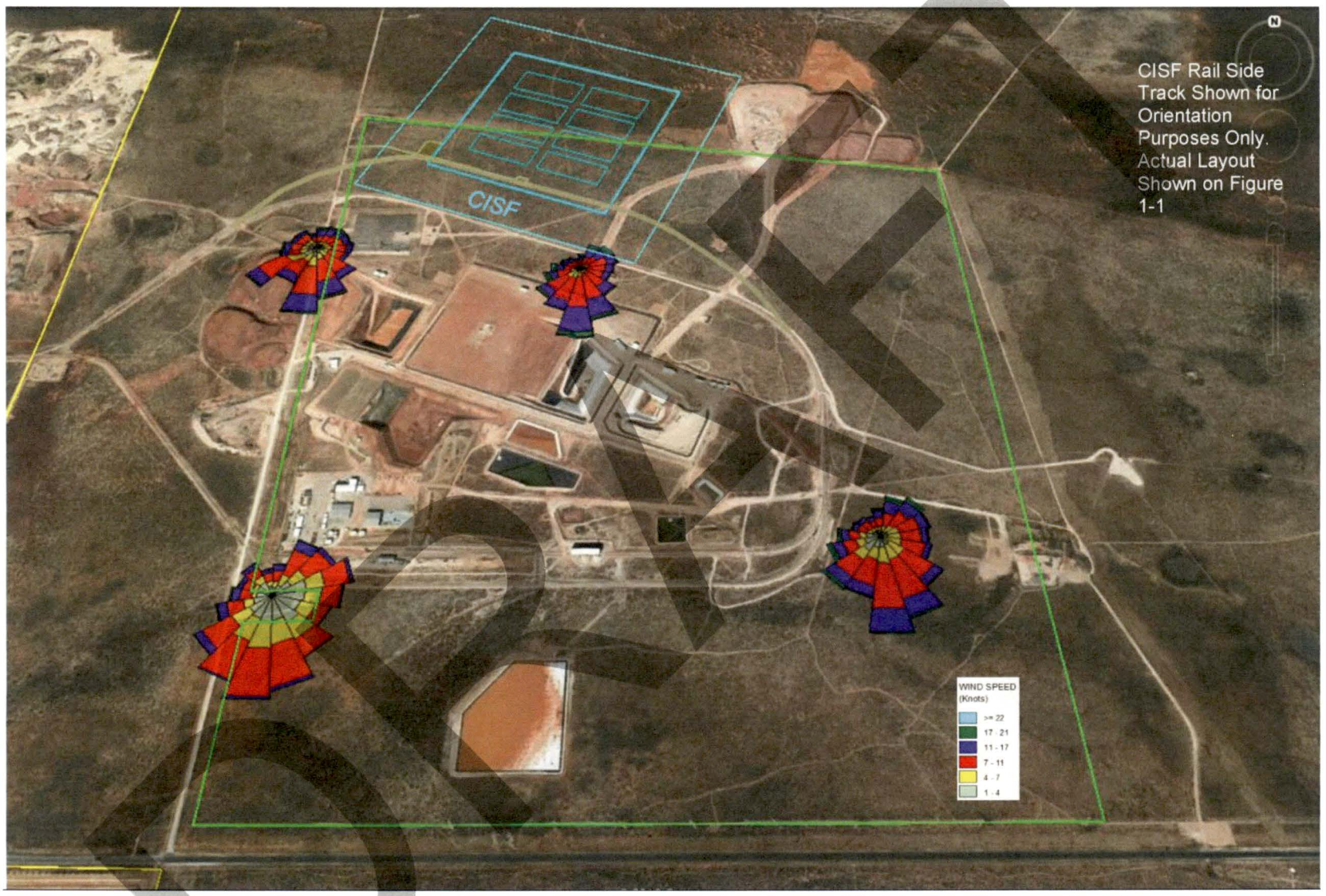
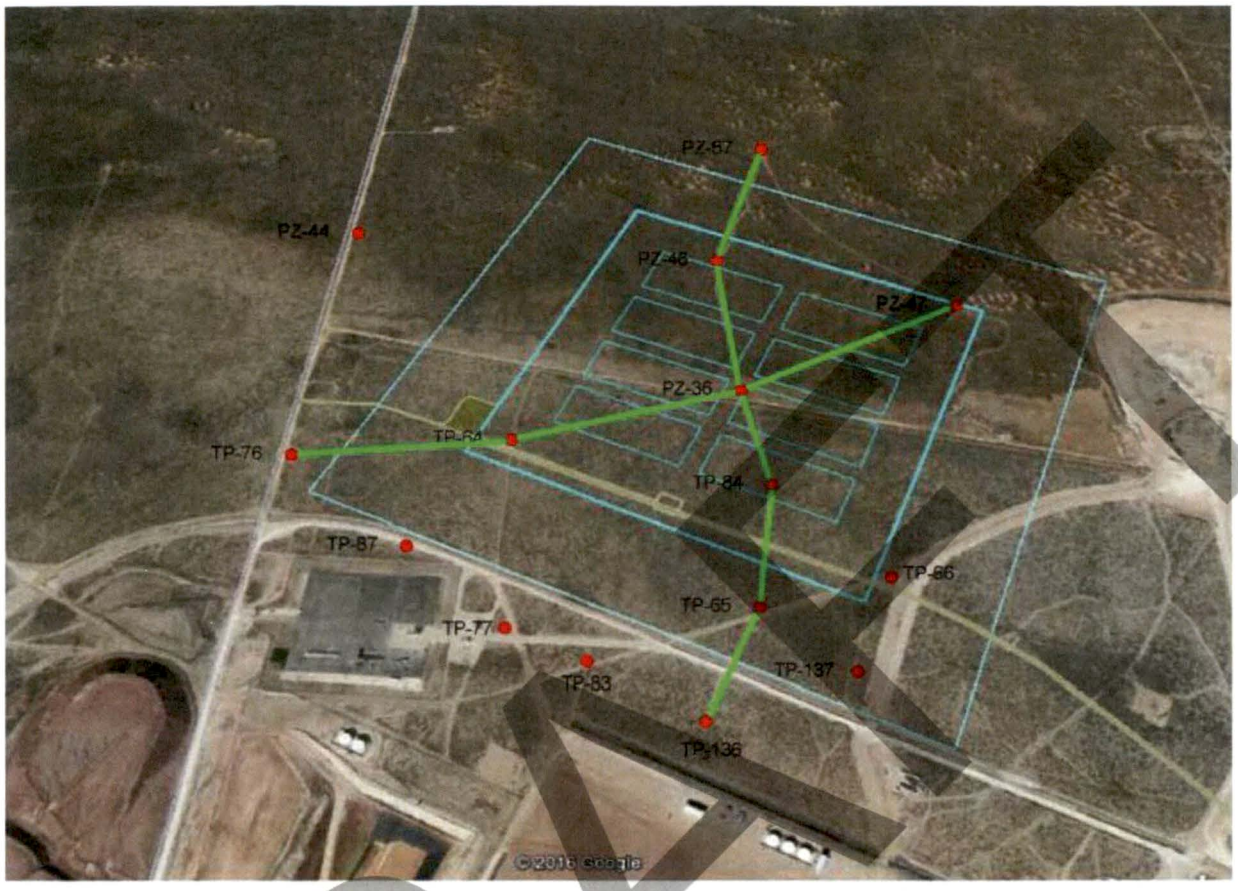


Figure 2-4
Wind Rose Location Map

All Indicated Changes are in response to RAI PA-1



Monitoring Well/ Piezometer Name	Date Drilled/ Completed	Total Depth Well (ft btoc)	Bottom of Well Elevation (ft msl)	Ground Elevation (ft msl)	Top of Casing Elevation (ft msl)	Depth to Top of Red Beds (ft bgs)	Top of Red Bed Elevation (ft msl)
PZ-36	7/20/05	78.98	3419.51	3494.79	3498.49	75.0	3419.79
PZ-44	1/22/08	82.98	3416.90	3496.59	3499.88	77.1	3419.49
PZ-46	1/23/08	93.83	3412.04	3502.38	3505.87	87.4	3414.98
PZ-47	1/24/08	92.22	3411.56	3500.60	3503.78	87.0	3413.60
PZ-57	1/23/08	99.56	3415.44	3511.79	3515.00	93.5	3418.29
TP-64	1/11/08	70.81	3433.99	3502.08	3504.80	65.3	3436.78
TP-65	1/11/08	57.68	3436.07	3490.40	3493.75	52.5	3437.90
TP-66	1/10/08	57.78	3430.88	3485.45	3488.66	51.0	3434.45
TP-76	2/7/08	53.42	3436.78	3487.06	3490.20	47.1	3439.96
TP-77	2/7/08	51.30	3436.09	3484.19	3487.39	45.4	3438.79
TP-83	2/11/08	55.55	3435.60	3487.77	3491.15	49.8	3437.97
TP-84	2/12/08	65.24	3429.59	3491.56	3494.83	58.7	3432.86
TP-87	3/15/08	49.02	3438.47	3484.17	3487.49	43.3	3440.87
TP-136	3/20/09	55.21	3438.01	3490.17	3493.22	50.5	3439.67
TP-137	3/20/09	56.46	3434.68	3488.00	3491.14	51.5	3436.50

Figure 2-15
Boring Locations in the Vicinity of the WCS CISF

All Indicated Changes are in response to RAI PA-1

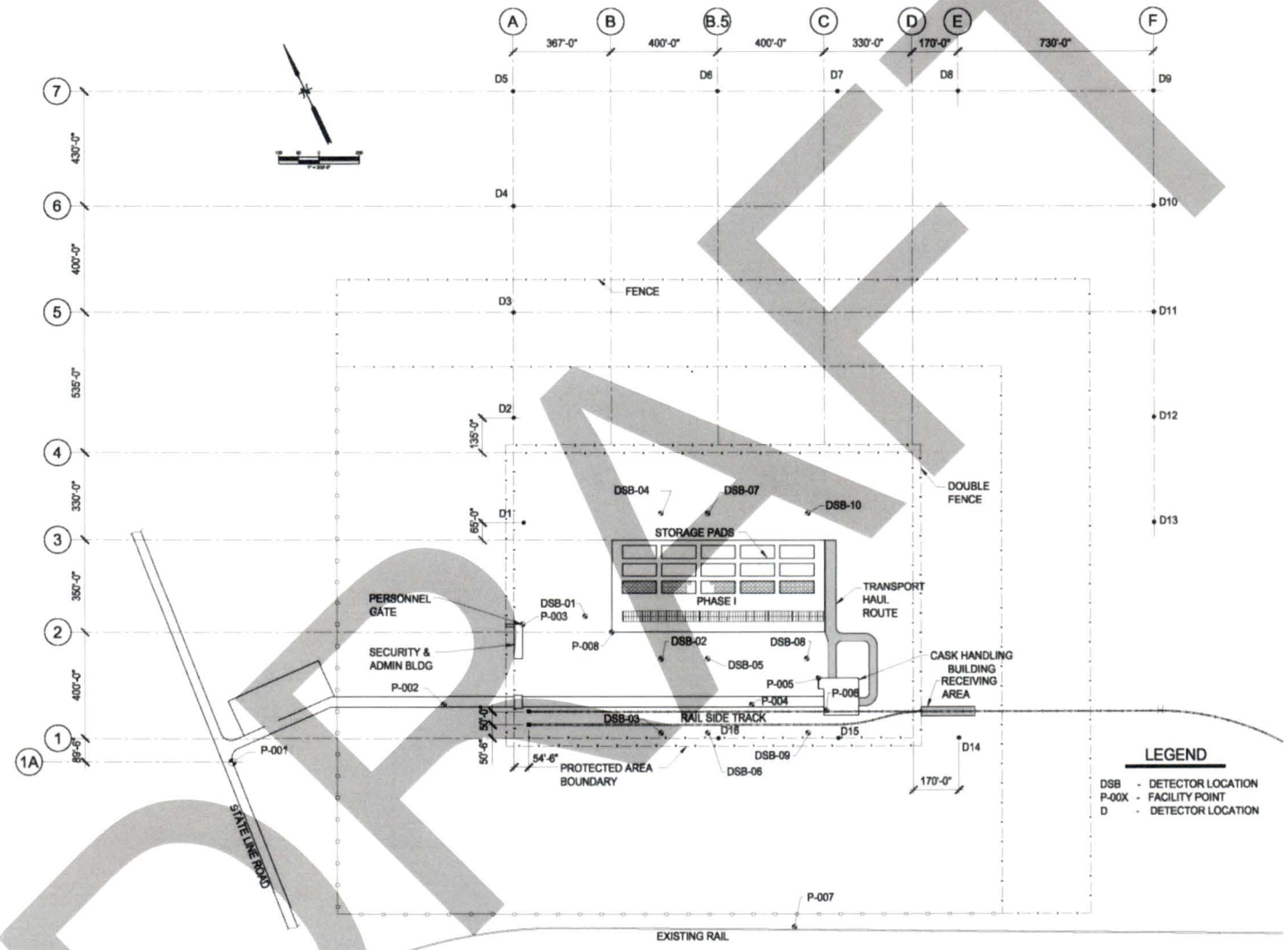


Figure 9-1
WCS CISF Conceptual Plan

All Indicated Changes are in response to RAI PA-1

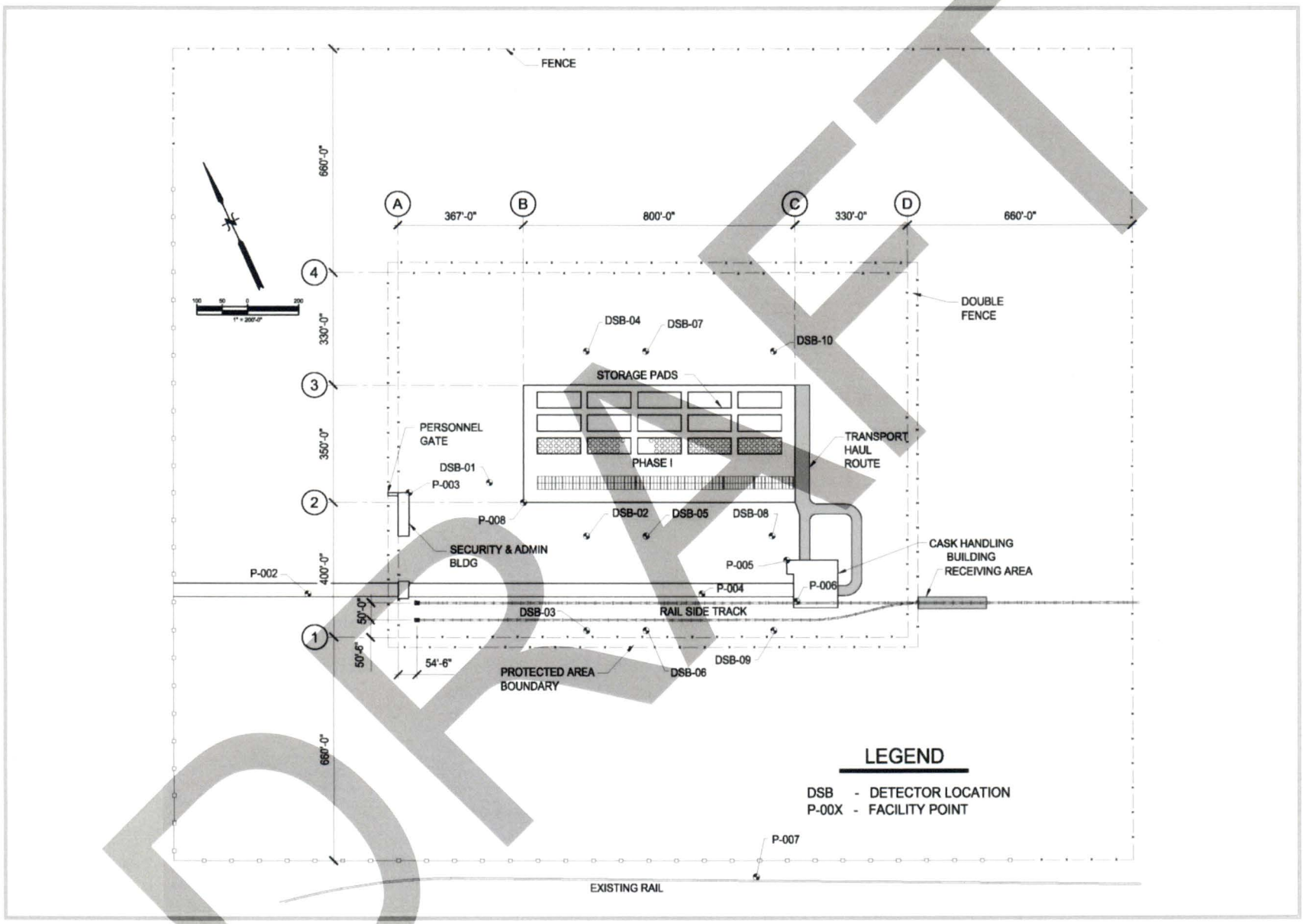


Figure 9-2
WCS CISF Plan, Phase 1

All Indicated Changes are in response to RAI PA-1

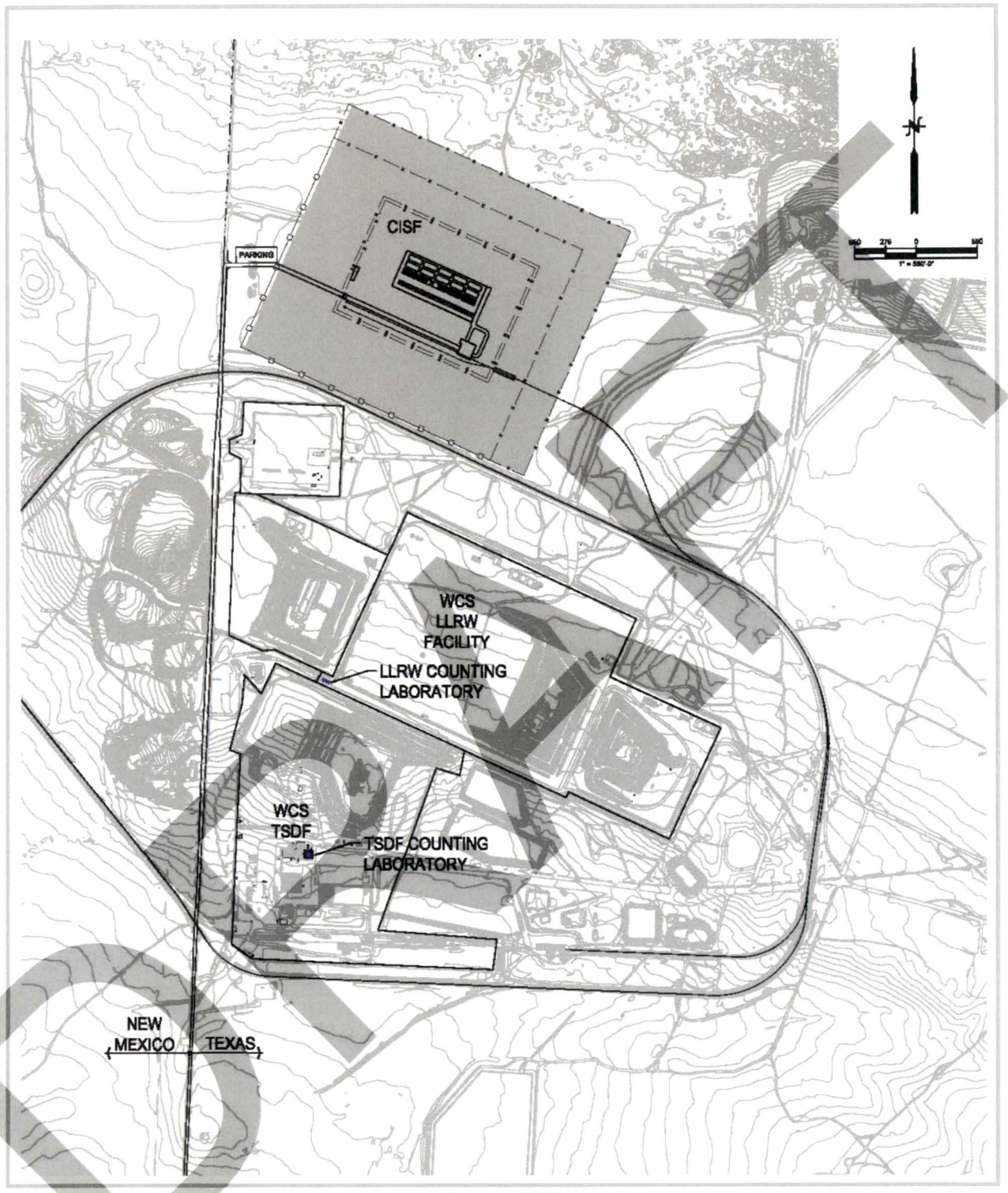


Figure 9-6
ISP and Waste Control Specialists Shared Laboratory Locations

All Indicated Changes are in response to RAI PA-1

RAI PA-2

Provide additional information on the new concrete batch plant to be constructed as part of the proposed CISF. This information should include:

- The size (acreage) of the batch plant and a figure showing its outline and location with respect to the proposed CISF and current site facilities.
- The design of the concrete batch plant (description of major components) and associated infrastructure (e.g., access roads, pipelines, utilities, and areas for parking, waste management, chemical storage, and maintenance).
- Any state and local permits or approvals that would be needed to construct and operate the batch plant.
- A description of construction, operation, and decommissioning activities for the concrete batch plant and an anticipated schedule for construction, operation, and decommissioning.
- The amount and source of water needed to operate the batch plant.
- Manpower needed to construct and operate the batch plant and whether or not construction and operation workers for the batch plant are already included in the resource impacts analysis in the ER (transportation, socioeconomics, etc.).
- The amount of land that would be disturbed during construction and operation of the batch plant and associated infrastructure.
- The volume of soil that would be excavated during construction and potentially stockpiled during operation of the batch plant, and available information on the disposition of the stockpiled soil.
- An assessment of the environmental impacts that construction, operation, and decommissioning of the batch plant would have on all resource areas (e.g., land use, transportation, geology and soils, water resources, air quality, ecological resources, visual and scenic resources, historic and cultural resources, noise, socioeconomics, public and occupational health, and waste management).
- Mitigation measures that would be implemented to reduce the environmental impacts associated with construction, operation, and decommissioning of the batch plant on all resource areas.
- Any environmental measures, management plans, and monitoring that would be required during construction, operation, and decommissioning of the concrete batch plant to comply with state and local rules and regulations.

ER Section 2.2.2.6 states that a concrete batch plant may be constructed to facilitate storage module construction and future expansion of the site. The ER provides limited information on the construction, operation, and decommissioning activities associated with the batch plant. Specifically, additional information on the batch plant is needed to support the NRC staff's description of the proposed action and evaluation of environmental impacts, including cumulative impacts, in the EIS.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which requires that the ER include a description of the proposed action and discuss the impacts of the proposed action.

Response to RAI PA-2:

ISP will no longer construct and operate a batch plant as part of the proposed CISF. References to the batch plant have been removed from ER, including Sections 2.2.2, 2.2.2.6, 4.2.1, 4.2.3, and 4.14. The reference to the batch plant was removed from ER Section 4.6 as part of the response to RAI AQ-4.

Impact:

ER Sections 2.2.2, 2.2.2.6, 4.2.1, 4.2.3 and 4.14 have has been revised as described in the response.

largest population center; Midland-Odessa, Texas is located to the southeast, about 103 km (64 mi) from the CISF with a population over 278,000 (Appendix A).

2.2.2 Description of the Facility

The CISF would be constructed in eight phases over 20 years on approximately 130 ha (320 acres) of land just north of the CWF and FWF.

The CISF will include SNF storage systems licensed under 10 CFR 72, SNF storage pads, a Cask Handling Building used to offload spent nuclear fuel canisters licensed under 10 CFR 71, a Security And Administration Building, and a railroad side track. More detailed descriptions of the facility components, as well as additional design features, can be found in Section 4.1, *Summary Description, Section 4.2, Storage Structures, Section 4.3, Auxiliary Systems,* Section 1.2, *General Description of Installation,* and Section 1.3, *General Description of Systems and Operations* in the SAR.

2.2.2.1 SNF Storage Systems

Currently, the NRC has licensed and approved SNF storage systems owned by TN Americas, NAC International, HOLTEC International, and Energy*Solutions*. Each of these systems is engineered to safely store spent fuel for 50 years or longer and this time can be extended almost indefinitely through rigorous inspections, aging management programs, maintenance, and re-licensing. SNF is stored horizontally in the TN Americas systems, vertically in both the NAC International or Holtec International systems, and either horizontally or vertically in the Energy*Solutions* system.

Approximately 80% of the SNF (approximately 4,000 MTU) currently stored at 12 decommissioned shutdown sites is in either TN Americas NUHOMS® or NAC International systems. ISP has teamed with TN Americas and NAC International to provide a safe alternative to store up to 40,000 MTUs of SNF at the CISF. Both NUHOMS® and MAGNASTOR® systems owned by TN Americas and NAC International, respectively, would be used for storing SNF at the CISF. The NRC has approved both of these SNF storage systems for use at existing commercial nuclear power plants located across the U.S. Additionally, both the NUHOMS® and MAGNASTOR® systems are licensed by the NRC for storage of SNF transported in canisters pursuant to the requirements in 10 CFR 71.

All Indicated Changes are in response to RAI PA-2

2.2.2.6 *Not Used*

2.2.2.7 Monitoring Wells

Located within the CISF OCA are eight monitoring wells associated with the adjacent Waste Control Specialists disposal facilities that are gauged periodically to check for the presence of water. Five of these wells are between the CISF OCA boundary and the CISF Protected Area Boundary and three are within the CISF Protected Area Boundary. Two of the five wells that are within the CISF Protected Area Boundary are within the footprint of a late-phase CISF storage cask array and will be removed or relocated as needed as the phased CISF project construction schedule progresses. There are no pipelines crossing the CISF. At the Security and Administration Building and at the Cask Handling Building, ISP will have underground sewage tank systems that discharge into above ground, grey water holding tanks with no onsite discharge. After testing to ensure compliance with applicable limits, the wastewater from these holding tanks will be drained or pumped for removal to an offsite POTW. There are no plans for underground tanks at the CISF other than the underground sewage tanks.

2.2.2.8 Waste Management

Waste management impacts associated with the construction of and operations at the CISF are expected to be very low. The CISF will be designed to minimize the volumes of radiological waste generated during operations and at the time of license termination. The volumes of non-radiological solid waste will also be minimized to the extent practical. Descriptions of the sources and effluent systems for each of these waste streams are discussed in Section 3.12 of this report. Disposal plans, waste minimization practices, and related environmental impacts are discussed in Section 4.13 of this report and in Chapter 6 of the CISF SAR. Environmental impacts and mitigation measures for CISF facilities and associated operations are discussed in detail in Chapters 4 and 5 of this ER, respectively, whereas radiological monitoring is described in Chapter 6 of this ER. Sections 1.2, *General Description of Installation* and Section 1.3, *General Description of Systems and Operations* of the SAR provide additional details.

2.3 PROCESS FOR IDENTIFYING POTENTIAL CISF SITE LOCATIONS

In order to identify potential locations for a CISF site, a rigorous search and screening process was conducted. ISP began by identifying a Region-of-Interest (ROI) consisting of a set of states that have the basic characteristics appropriate for a CISF site. This set of states was then narrowed down to states and counties that had explicitly expressed support for siting a CISF in

No additional construction access roadways off of Texas State Highway 176 would be required to support construction. The materials delivery and construction worker access road would run north off of Texas State Highway 176 along the west side of the existing LLRW site. These roadways would eventually be converted to permanent access roads upon completion of construction. Therefore, impacts from new access road construction would be minimized.

4.2.1 Facility Construction Impacts

Impacts from construction transportation would include the generation of fugitive dust, changes in scenic quality, and added noise. Dust would be generated to some degree during the various stages of construction activity. The amount of dust emissions would vary according to the types of activity. The first 12 months of construction would likely be the period of highest emissions since approximately 63 ha (155 acres) would be involved, along with the greatest number of construction vehicles operating on an unprepared surface. However, it is expected that no more than 20 ha (50 acres) would be involved in this type of work at any one time.

RAI AQ-6

See ER Section 4.6 for air quality impacts from construction.

4.2.1.1 Scenic Views

RAI PA-2 and RAI AQ-6

Although CISF construction would substantially alter the natural state of the landscape, impacts to scenic views are not considered to be significant, based on the absence of high quality scenic views in the area and the presence of currently developed industrial land uses on surrounding properties substantial. Construction vehicles would be comparable to trucks servicing neighboring facilities in terms of their impact on the scenic views.

During decommissioning, the site would be decommissioned to levels that would allow for the unrestricted release of the CISF pursuant to 10 CFR 20, Subpart E. Accordingly, the impact to scenic views during decommissioning would be small.

4.2.3 Mitigation Measures

To control fugitive dust production, reasonable precautions would be taken to prevent PM and/or suspended PM from becoming airborne. When necessary, water would be used to control dust on dirt roads, in clearing and grading operations, and during construction activities. Water conservation would be considered *for activities which are not essential to* dust suppression. See Section 4.4 for a discussion of water conservation measures. Mitigation measures would not be required during operations or decommissioning of the CISF.

RAI AQ-8

RAI AQ-8

RAI PA-2 and RAI AQ-8

4.2.4 Radioactive Material Transportation Impacts

Over the course of the 20-year operational life of the CISF, ISP would receive up to 40,000 MTUs of SNF and related GTCC waste from decommissioned commercial nuclear reactor sites and operating reactors. SNF would be transported exclusively by rail. All SNF would be transported approximately 169 km (105 mi) from Monahans, Texas to the CISF along the transportation corridor.

The DOE or nuclear plant owner(s) holding title to the SNF will be responsible for transporting SNF from existing nuclear power plants to the CISF by rail in transportation casks licensed by the NRC pursuant to 10 CFR 71. The preparation of such shipments will be conducted in accordance with written procedures prepared by the commercial nuclear power plant, the DOE, or their contractors. The DOE or private qualified logistics company will also be responsible for coordinating with federal agencies, such as the U.S. Department of Transportation, U.S. Department of Homeland Security, U.S. Environmental Protection Agency, and the Federal Emergency Management Agency, regarding transportation of SNF from the commercial nuclear reactor sites to the CISF.

If the DOE is the shipper, the federal government, through DOE, is responsible for providing emergency training to states, tribes, and local emergency responders along the transportation routes where SNF would be transported to the CISF. ISP joint venture member Waste Control Specialists has acquired considerable experience in responding to the potential transportation events given its relative proximity to the Waste Isolation Pilot Plant. Local fire fighters, law enforcement, and emergency medical staff have been trained to respond to put out fires and organizing any emergency response actions that may be needed to reduce the severity of events related to transportation incidents involving SNF.

Air Quality

There would be small integrated impacts to air from fugitive dust emissions during construction activities. Mitigation measures can be used to suppress the amount of dust in the air during construction. Dust emission will be reduced once earth moving activities cease and paved roads are constructed.

Historic and Cultural Resources

There would be no integrated adverse impacts to cultural or historic resources. Evaluations conducted for the construction phase did not identify any archeological materials within the area of potential effects (APE), and no further work was recommended. Because the operations phase would not result in any new subsurface impacts, there would be no integrated impacts.

No historic resources were identified within the APE for indirect/visual impacts, which was buffered from the full project footprint. There would be no effects to historic resources in either the construction or operations phases; therefore there would be no integrated impacts to historic resources.

Visual and Scenic Resources

For visual/scenic resources, the analysis in Section 4.9 includes cumulative impacts from other nearby operations. ISP does not anticipate any additional integrated impacts to visual and scenic resources due to the simultaneous construction and operation of different phases of the CISF.

Socioeconomics

There would be minor socioeconomic integrated impacts. The input-output IMPLAN model used for the Socioeconomic Impact Analysis (SIA) for the proposed project evaluated the impacts of both the construction and operations phase. Although sequential construction campaigns would occur, the model used the initial investment of approximately $16.1 million (including all excavation and grading, fencing, and security system costs, plus building sufficient storage pads for the first 200 storage systems).

Impacts of both the construction and operations phase were found to be economically positive, resulting in additional jobs that would also be higher paying than the average for the waste disposal sector in the region. Total 2013 employment in the three-county analysis region was

RAI PA-3

Provide additional information concerning the site selection process.

ER Section 2.3 and Attachment 2-2 provide a discussion of the criteria and weighting factors that ISP used to identify potential locations to site the proposed CISF, as well as the scores for the four sites considered. Table 2.3-4 in the ER provides the overall scoring based on three criteria: siting, environmental considerations, and operational considerations. The discussion in ER Section 2.3.3 identifies certain criteria either as environmental considerations or as operational considerations; however, no siting criteria are identified. As a result, it is not clear how siting scores were determined in Table 2.3-4. Therefore, please clarify how the siting scores were calculated.

Additionally, in ER Section 2.3.7, ISP provides its review of a potential site in Eddy County, New Mexico, One of the references used is a 2015 report from Cox McLain Environmental Consulting. The NRC staff was not able to locate this report within ISP's license application. Therefore, please provide a copy of the report or point the staff to its location within the application.

This information is needed in accordance with 10 CFR 51.45(b) and (b)(3), which requires that the ER include a description of the proposed action and alternatives to the proposed action.

Response to RAI PA-3:

Siting scores were calculated using sub-criteria that were given a weighting based on the contribution of the sub-criteria to the following critical siting criteria:

- Criterion 1 – political support
- Criterion 2 – favorable seismological and geological characteristics
- Criterion 3 – rail access
- Criterion 4 – land parcel size
- Criterion 5 – land availability

Each county was given a score of 1 to 10 and the weighting scale was used to determine the final score. The siting score determination is given in the New ER Table 2.3-1a, and ER Sections 2.3.3 and 2.3.8 have been updated to provide reference to this new table.

The reference to the 2015 report from Cox McLain Environmental consulting regarding the potential site in Eddy County, New Mexico is provided in Enclosure X, as requested. This reference was also provided in the November 16, 2016 ISP Response to RSI MD NP-1.1.

Impact:

ER Sections 2.3.3 and 2.3.8 have been revised and Table 2.3-1a has been added as described in the response.

2.3.3 Site Selection Process: Factors in the Two-Tiered Screening Process

A two-tiered screening process was developed for evaluating each of the four counties for the purpose of identifying the preferred site location and suitable location alternatives. Under the first screening tier, five "Go: No Go" criteria were evaluated to determine whether any county should be excluded from further consideration. Criteria 1-5 comprised the first tier of the screening process: political support for the project, favorable seismological and geological characteristics, availability of rail access, land parcel size, and land availability. Any county that scored a "No Go" for any of these five criteria would be excluded from further consideration.

After completing the first tier of evaluations, a second tier screening process was used to evaluate each of the four counties in more detail. *Criteria 1-5 as previously discussed were quantitatively scored for each of the four counties.* Criteria 6 through 10 assessed Operational Needs and Criteria 11 through 15 assessed Environmental Considerations. For the second tier screening process, a score of 0 to 100 was assigned to multiple scoring factors for each criterion.

Descriptions of all criteria are provided below.

Criterion 1 assessed whether a county has adequate political support for a CISF, specifically whether the state and county governments had expressed an interest in siting a CISF.

Criterion 2 assessed the seismology and geology of the area to ensure that potential sites within each of the four counties were located in areas that were tectonically stable with favorable geologic characteristics.

Criterion 3 assessed the availability of rail access, which was determined to be important given the desire to transport SNF exclusively by rail. A county that could not support receipt of SNF exclusively by rail would require double handling of the SNF and additional adverse environmental impacts due to construction of the rail spur. The need to construct a spur less than 8 km (5 mi) long to connect to the rail line was considered a "Go". Requiring transport by road or constructing a spur more than 8 km (5 mi) to a rail line was considered "acceptable", but was not considered a substantial enough constraint to exclude the county from further consideration.

All Indicated Changes are in response to RAI PA-3

2.3.8 Site Selection Process: Summary of Scores

Four possible locations to construct and operate a CISF were explored. One of these locations, the Waste Control Specialists property in Andrews County, Texas, ultimately became the Proposed Action, as described in Section 2.2 of this ER. The remaining three locations were not carried forward for detailed analysis based on their scores for the screening criteria.

The four locations were first evaluated using the first tier of five "Go: No Go" screening criteria. All four counties received "Go" or "Acceptable" ratings for all five criteria (Table 2.3-1). Therefore, all four locations were advanced to the second tier of screening.

Table 2.3-1 First Tier Go: No Go Screening Criteria

	FIRST PHASE SCREENING MATRIX				
Location	Criterion 1 Political Support	Criterion 2 Seismology/ Geology	Criterion 3 Rail Access	Criterion 4 Land Parcel Size	Criterion 5 Land Availability
Andrews County, TX	Go	Go	Go	Go	Go
Loving County, TX	Go	Go	Acceptable	Go	Acceptable
Lea County, NM	Go	Go	Go	Go	Go
Eddy County, NM	Go	Go	Go	Go	Go

Results of the second tier of screening, which evaluated *quantitatively the site selection criteria, which are the same as the Go: No Go criteria, as well as* the operational considerations and environmental impacts at each location, are shown in Tables *2.3-1a, 2.3-2, and 2.3-4*.

All Indicated Changes are in response to RAI PA-3

Table 2.3-1a Second Phase Screening Matrix: Site Selection Scoring Summary

Site Selection Criteria*	Weight %	Sub-Criteria	Andrews County	Loving County	Lea County	Eddy County
Criterion 1 - Political Support	100	Advocates	10	5	7	7
	100	Incentives	10	10	10	10
	80	Cooperation in Permitting	10	10	10	10
Criterion 2 - Favorable Seismological and Geological Characteristics	100	Peak Ground	10	10	10	10
	80	Liquefaction Potential	8	8	8	8
	100	Acceptable Weight Bearing	8	8	8	8
	50	Differential Settling	8	8	8	8
	30	Surveys Available	10	1	7	7
	80	Away from Population Centers Exceeding 50,000	10	10	10	10
	100	Away from Flood Plains	10	10	10	10
	100	Away from Aquifers	10	10	10	10
	80	Away from Rivers	10	10	10	10
	80	Away from Lakes	10	10	10	10
Criterion 3 - Rail Access	100	Proximity to Existing Rail Lines	10	1	8	7
	100	Existing Rail Spur	10	1	6	6
Criterion 4 - Land Parcel Size	100	Future Expansion	10	10	10	10
	100	Buffer Zone	10	10	10	10
	80	Plant Layout	10	10	10	10
Criterion 5 - Land Availability	80	Available and No Purchase Required	10	1	10	5
		Score	**157.4**	**124.5**	**147.5**	**142.5**
*Total weight for site selection criteria is 100						

All Indicated Changes are in response to RAI PA-3

NEPA PROCESS (NP)

RAI NP-1

Provide a list of relevant meetings, hearings, and presentations that have been made to organizations in the local communities and other parts of Texas and New Mexico that have been held to explain ISP's storage interests related to the proposed CISF.

The ER should provide a description of ISP's outreach efforts made to inform communities and affected populations within the region of the proposed CISF. This information would assist the NRC staff's analysis regarding the potential for disproportionate impacts to communities.

This information is needed in accordance with 10 CFR 51.45(c), which requires the ER to include sufficient data to aid the NRC in its development of an independent analysis.

Response to RAI NP-1:

ER Section 3.10 has been updated to provide a description of ISP's community outreach efforts to inform communities and affected populations within the region of the proposed CISF about the storage and transportation of spent nuclear fuel.

ISP and joint venture member, Waste Control Specialists, have recognized the need for local communication and outreach ever since Waste Control Specialists began to contemplate applying for a CISF license. From the time of its initial community-wide dinner to discuss its interest and the Andrews County declarations of support, through the establishment of website(s) in English and Spanish, social media accounts, appearances before governmental and civic groups, the conduct of many site tours (including offering a Spanish translation), hiring a Community Liaison, the re-opening of an office in Andrews, numerous and continuing informational advertisements and letters in print, these efforts are indications of our intent to keep all segments of state and local government and citizens informed of our activity.

Table NP-1-1 provides a digest of relevant local outreach efforts including meetings tours and print advertising, etc., that have been made by ISP and its joint venture members to explain ISP's storage interests related to the proposed CISF.

Table NP-1-1
List of Public Outreach Efforts

Date	Event
2014 Summary	**Engaged the community via a widely attended BBQ to discuss the proposal to spent fuel at the Waste Control Specialists Andrews Site and gave a presentation to the Eunice NM, City Council.**
12/1/14	Community wide BBQ to discuss proposal to store Spent fuel at the Waste Control Specialists Andrews Site
12/9/14	Gave presentation on Interim Storage of Spent Fuel to the Eunice, NM City Council
2015 Summary	**Issued Press Releases, provided multiple tours of the Waste Control Specialists Site and launched a website (WCSSTORAGE.com launched - now found at WCSTEXAS.com) for Interim Storage of Spent Fuel at the Waste Control Specialists Andrews Site**
2/15	Waste Control Specialists Press release on submittal of letter of intent to NRC
3/15	NEI Used Fuel Conference Presentation on Spent Fuel
5/24/15	Press release on partnership between Waste Control Specialists and Orano (formerly AREVA) for interim spent fuel storage in Andrews County News
7/15	US Congressmen Mike Conaway, Richard Hudson and Steve Pearce, along with local leadership toured the site provided a presentation on Spent Fuel and Waste Control Specialists
Throughout 2015	Multiple tours of the Waste Control Specialists site to include presentations on Spent Fuel Storage
2016 Summary	**Continued to conduct multiple tours of the Waste Control Specialists Site; sent mailings to all of the residents of Andrews County, informational articles published in local papers, including monthly updates and issued press releases on the status of the project**
Throughout 2016	Multiple tours of the Waste Control Specialists site to include presentations on Spent Fuel Storage
2016	Sent two CISF informational mail outs to all residents of Andrews County
4/21/16	Informational article about storage of spent fuel and the license application process in Andrews County News
4/28/16	Press release to announce Waste Control Specialists filing License Application with NRC for CISF
5/1/16	Update in Andrews County Newspaper on status of CISF Project
6/16	Update in Andrews County Newspaper on status of CISF Project
6/16	Mail outs on transportation of Spent Fuel sent out to Andrews County
6/26/16	Ad in Andrews County News about transportation of Spent Fuel
7/7/16	Update in Andrews County Newspaper on status of CISF Project
7/24/16	Update in Andrews County Newspaper on status of CISF Project
10/9/16	Update in Andrews County Newspaper on status of CISF Project
11/6/16	Ad in Andrews County News about transportation of Spent Fuel

Date	Event
2017 Summary	**Continued to conduct multiple tours of the Waste Control Specialists Site; send informational articles and placed ads published in local papers related to the project; and made statements during the Public Scoping Meetings for the WCS CISF.**
Throughout 2017	Multiple tours of the Waste Control Specialists site to include presentations on Spent Fuel Storage
1/29/17	Article in Andrews County News on NRC Acceptance of CISF License Application
2/17	Ran Ads in Andrews and Hobbs to announce NRC public meetings to promote attendance
2/13/17	Made Statements during Public Scoping Meeting for WCS CISF in Hobbs, NM
2/15/17	Made Statements during Public Scoping Meeting for WCS CISF in Andrews, TX
2/23/17	Made Statements during Public Scoping Meeting for WCS CISF in Rockville, MD (webcast)
4/6/17	Made Statements during Public Scoping Meeting for WCS CISF in Rockville, MD (webinar)
4/20/17	Press release announcing temporary suspension of NRC license application - Andrews County News and Hobbs News Sun
2018 Summary	**Continued to conduct multiple tours of the Waste Control Specialists Site; send informational articles and placed ads published in local papers related to the project; opened a new office in Andrews, Texas; held or participated in meetings with state and local leaders; and hired a community liaison.**
Throughout 2018	Multiple tours of the Waste Control Specialists site to include presentations on Spent Fuel Storage
3/2/18	Community Leaders of Andrews Presentation and tour of Waste Control Specialists Site to include discussion on CISF
3/5/18	Press release announcing intent to resume NRC license application with Orano USA - Andrews County News
3/22/18	Press release announcing Interim Storage Partners - Andrews County News
4/12/18	Article to update status of NRC license application
6/5/18	Opened new Waste Control Specialists office in Andrews to include information on CISF and models of storage systems and transportation casks for spent fuel
6/5/18	Hosted community leadership meeting to provide Waste Control Specialists update to include the NRC license application for spent fuel
6/7/18	Article to update status of NRC license application - Andrews County News
7/25/18	Article to update status of NRC license application - Andrews County News
8/6/18	Andrews ISD presentation to all staff - Included Waste Control Specialists information and discussion on CISF
8/15/18	Texas Legislators Tour to include discussion on storage and transportation of Spent Fuel
8/27/18	Press Release to announce NRC acceptance of ISP license application
9/13/18	Article in Andrews County News on Spent Fuel Storage
9/25/18	Met with Eunice, NM City Council to discuss the ISP Spent Fuel Project

Date	Event
10/1/18	Hired Waste Control Specialists Community Liaison to have direct interaction with community on a regular basis regarding Waste Control Specialists and the WCS CISF
10/2/18	Texas Compact Commission Tour to include discussion on transportation and storage of Spent Fuel
10/4/18	Spoke with Stanton, TX City Manager about the ISP Spent Fuel Project
10/17/18	Presentation to Gaines County Texas County Commissioners - Included Waste Control Specialists information and discussion on CISF
10/22/18	Called Midland County Commissioner Randy Prude to discuss the ISP Spent Fuel Project
10/23/18	Spoke with Odessa, TX City Manager about the ISP Spent Fuel Project
10/24/18	Spoke with Lubbock, TX Mayor and staff about the ISP Spent Fuel Project
11/7/18	Texas State Technical College Tour
11/13/18	Met with the Jal, NM City Council to discuss the ISP Spent Fuel Project
11/15/18	URENCO Tour for employees to include specific discussion on transportation and storage of Spent Fuel
12/2/18	Information article about Spent Fuel storage in Andrews County News
12/3/18	Information article about Spent Fuel storage in Midland Reporter Telegram
12/10/18	Met with the Stanton, TX City Council to discuss the ISP Spent Fuel project
12/19/18	Met with Andrews Leadership group to discuss current status of projects to include ISP
2019 Summary	**Continuing to conduct tours of the Waste Control Specialists Site; send informational articles and placed ads published in local papers related to the project; hold or participate in meetings with state and local leaders; participated in Oral Arguments related to the project; launched a companion Spanish language website on the WCS CISF project.**
2019	Multiple tours of the Waste Control Specialists site to include presentations on Spent Fuel Storage
6/5/19	Women In Nuclear Tour to include specific discussion on transportation and storage of Spent Fuel
6/5/19	Nuclear Legislative Working Group Tour to include specific discussion on transportation and storage of Spent Fuel
6/10-11/19	Oral Arguments on the matter of ISP WCS CISF held in Midland TX.
6/12/19	Met with Andrews Leadership group to discuss current status of projects to include ISP
6/18/19	Community Tours - Continuing to schedule additional dates - with specific discussion on transportation and storage of Spent Fuel
6/27/19	Community Tours - Continuing to schedule additional dates - with specific discussion on transportation and storage of Spent Fuel
7/28/19	Information article about Spent Fuel storage in Odessa American newspaper
7/28/19	Information article about Spent Fuel storage in Midland Reporter Telegram newspaper
8/4/19	Information article about Spent Fuel storage in the Andrews County News
8/28/19	Eunice Rotary Tour - with specific discussion on transportation of Spent Fuel

Date	Event
9/19/19	Community Tours - Continuing to schedule additional dates - with specific discussion on transportation and storage of Spent Fuel
9/24/19	Community Tours - Continuing to schedule additional dates - with specific discussion on transportation and storage of Spent Fuel

Impact:

ER Section 3.10 has been revised as described in the response.

transmission substation, a county landfill, a uranium enrichment plant, and an aboveground oilfield waste disposal land farm.

Adjacent to the CISF to the west in New Mexico is a large uranium enrichment plant called the NEF, operated by URENCO. This facility was developed and constructed since the last visual resources inventory was conducted. This facility is the most substantial new structure on the visual landscape. The relationship of the CISF to other WCS operations and URENCO is shown in Figure C-1 in Appendix A. Photo locations are shown in Appendix A, Figure C-2 along with an 8 km (5 mi) radius and a 16 km (10 mi) radius around the CISF. The proposed CISF activities would take place beyond the existing railroad spur on the Waste Control Specialists property, farthest from Texas State Highway 176 compared to other current activities at the CISF.

It was determined that the visual resources study area does not contain notable representations of any of the landscape features listed above, although the relative lack of visual obstructions to a vast view of this section of the west Texas/east New Mexico landscape could be considered the "visual character" of the area. With the exception of a roadside picnic area and historical marker, no recreational resources are identified in the immediate area of the site. Overall, the entire study area can be considered to have modest scenic quality that is pleasant to regard for its rural, undeveloped nature, but not dramatic, unique, or rare. Facilities geared towards resources extraction (the Lea County Landfill and oil well pump jacks) exist in the project area, in addition to the URENCO facility, all of which have an equal or higher impact on the visual landscape compared to the proposed CISF.

3.10 SOCIOECONOMICS

This section describes the current social and economic characteristics of the ROI surrounding the CISF *and describes ISP public outreach efforts to inform the communities and affected populations within the region of the proposed CISF about the storage and transportation of spent nuclear fuel.* Information is provided on population, including minority and low-income areas, economic trends, housing, and community services in the areas of education, health, public safety, and transportation.

The primary labor markets for the operation of the processing and storage facility will be Andrews County, Texas, and Lea County, New Mexico. The Andrews County seat is located in the City of Andrews, about 48 km (30 mi) east-southeast of the CISF. There are no population

local economy, in addition to a growing manufacturing sector. Five libraries, nine financial institutions, and two daily newspapers serve Lea County. Cities in Lea County that are within the ROI include Hobbs, Eunice, and Jal. In Lea County, there are five public school districts and four private schools. The closest school district is in Eunice, located 9.7 km (6 mi) to the west, with the other districts located in Hobbs, Jal, Lovington, and Tatum. The main campus of the University of the Southwest (USW) and New Mexico Junior College (NMJC) are located in and near Hobbs, New Mexico. NMJC's Training and Outreach Facility provides workforce training, online courses, and a center for legal studies.

There are two hospitals in Lea County, New Mexico. The Lea Regional Medical Center is located in Hobbs, New Mexico, about 32 km (20 mi) north of the CISF. In Lovington, New Mexico, 63 km (39 mi) north-northwest of the CISF, Covenant Medical Systems manages Nor-Lea Hospital, a 25-bed Medicare-certified Critical Access Hospital serving southeastern New Mexico.

Andrews County had a tax base (total certified net taxable value) in 2014 of over $7.2 billion dollars, a general fund tax rate of 0.2936 per $100, and a road and bridge tax rate of 0.0477 per $100 (Andrews County Appraisal District 2015). The county tax levy in 2014 for all funds amounted to almost $21,177,205. Total tax rates (per $100) in 2014 for jurisdictions within Andrews County Appraisal District include: Andrews Independent School District – a combined rate of $1.17000; City of Andrews - $0.18900; Andrews County - $0.2936; and, Andrews Hospital District - $0.29612 (CMEC, 2015).

Finally, ISP has and continues to have strong community outreach to inform communities and affected populations within the region of the proposed CISF about the storage and transportation of spent nuclear fuel. ISP joint venture member Waste Control Specialists hosts regular tours for community members from Texas, New Mexico, and beyond. ISP provides a vast amount of information on their website in both English and Spanish to try and inform the public about the proposed facility. In addition, ISP launched a social media campaign to help educate the general public about radiation to include the storage and transportation of spent fuel. ISP joint members Waste Control Specialists and Orano both provide information on their websites about the WCS CISF. ISP and its joint venture members utilize the local media to keep the local communities updated on the license status and aspects of the project on a regular basis. ISP also participates in many industry conferences to inform not only the immediate area near the proposed facility but also the rest of the United States.

REGULATORY REQUIREMENTS AND PERMITTING (RRP)

RAI RRP-1

Provide, in tabular format, a list of all Federal, State, Tribal, or local approvals, authorizations, certifications, consultations, and permits that would be necessary to construct and operate the proposed CISF and associated infrastructure. Include in the list the status of the approval, authorization, certification, consultation, or permit (e.g., yet to be submitted, submitted, under review, issued).

ER Section 1.3 provides a general discussion of applicable regulatory requirements, permits, and required consultations for construction and operation of the proposed CISF. Based on the NRC staff's review, it appears that some regulatory and permitting requirements are not discussed in the ER. For example, State permitting requirements may apply to construction and operation of the railroad side track that may extend into New Mexico (see ER Section 2.2.2.5 and ER Figure 4.5-1) and a new concrete batch plant (see ER Section 2.2.2.6). A complete discussion of applicable regulatory requirements is needed to support the NRC staff's description and evaluation of applicable statutory, regulatory, and permitting requirements in the NRC's EIS.

This additional information is needed in accordance with 10 CFR 51.45(d), which requires that the ER include a list of all Federal, State, regional, and local permits, licenses, approvals and other entitlements that the applicant must obtain, as well as a description of the status of compliance with these requirements.

Response to RAI RRP-1:

The railroad side track has been updated and no longer extends into New Mexico, which removes any permitting requirements (other than those noted below) with the State of New Mexico. The ISP Response to RAI PA-1 addresses the updated railroad layout.

ISP has removed the proposed concrete batch plant from the CISF project, which removes any permitting requirements associated with that system. ISP Response to RAI PA-2 addresses the removal of the proposed concrete batch plant.

Section 1.3 of the ER has been updated to point to new Table 1.3-1, which lists all federal, sate, tribal, or local approvals, authorizations, certifications, consultations, and permits necessary to construct and operate the proposed CISF and associated.

Impact:

ER Section 1.3 has been revised and ER Table 1.3-1 has been added as described in the response.

the independent storage of SNF. ISP anticipates the SNF would be stored at the CISF for 60-100 years before a permanent geologic repository is opened consistent with the NRC's Continued Storage Rule.

The CISF will be decommissioned at the end of facility life in accordance with 10 CFR 20, Subpart E.

Below is the anticipated schedule for the construction and operation of the proposed CISF:

- Request restart of review of License Application in May 2018
- Receive license by September 2020
- Construction of Phase 1 of the CISF begins in September 2021
- WCS CISF commences operations in July 2023

1.3 APPLICABLE REGULATORY REQUIREMENTS, PERMITS, AND REQUIRED CONSULTATIONS

Construction and operation of the CISF in Andrews County, Texas, would require several environmental permits and related plans by various federal and state regulatory agencies. Pursuant to the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (40 CFR 1500-1508) enabling regulations, consultations with other federal agencies may be required, e.g. U.S. Fish and Wildlife Service (USFWS). Comments and recommendations by any affected or responsible agencies are part of the review process by the NRC. ISP has letters prepared for participating agencies and does not anticipate any administrative delays. *Table 1.3-1 provides a list of Federal, State, Tribal, and local approvals, authorizations, certifications, consultations, and permits required to construct and operate the facility.*

Table 1.3-1, Federal, State, Tribal, and Local Authorizations Required for the CISF

ORGANIZATION	REQUIRED ACTION	CURRENT STATUS
U.S. Nuclear Regulatory Commission	*Materials License SNM-1050 (10 CFR Part 72)*	*Under NRC review*
U.S. Nuclear Regulatory Commission	*Transportation Package Approval and Certification (10 CFR Part 71). Certificate of Compliance*	*71-9255: Issued* *71-9255: Issued* *71-9302: Issued* *71-9235: Issued* *71-9270: Issued* *71-9356: Issued*
U.S. Fish and Wildlife Service	*Consultation Required*	*Complete (ER Attach. 3-5)*
Texas Parks and Wild	*Consultation Required*	*Complete (ER Attach. 3-5)*

ORGANIZATION	REQUIRED ACTION	CURRENT STATUS
Texas Commission on Environmental Quality (TCEQ)	Texas Pollutant Discharge Elimination System (TPDES) Permit	Yet to be Submitted (Pre-Construction)
TCEQ	Construction General Permit (CGP TXR150000)	Yet to be Submitted (Pre-Construction)
TCEQ	Stormwater Pollution Prevention Plan (SWPPP)	Yet to be Submitted (Pre-Construction)
TCEQ	Notice of Intent (NOI)	Yet to be Submitted (Pre-Construction)
TCEQ	Spill Prevention, Control, and Countermeasures Plan (SPCC)	Yet to be Submitted (Pre-Construction)
Texas Historical Commission (THC)	Notification Required	Notification has been made and ISP has received a "No Effects" Confirmation Letter from THC (Dated 6/15/2005).
New Mexico Department of Cultural Affairs (NMDCA)	Notification Required for 1 mile buffer area around CISF disturbance.	Notification has been made and ISP has received a letter of concurrence from NMDCA
U.S. Army Corp of Engineering (USACE)	Notification Required under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.	ISP has received a Determination of Non-Jurisdiction from USACE (Dated 6/24/2019)
Tribal Organizations	None	NA
Local Law Enforcement Agency: Andrews Texas Police Department	Memorandums of Understanding	Draft Updates of Existing MOU will be executed prior to start of operations
Local Law Enforcement Agency: Andrews County Sheriff's Office	Memorandums of Understanding	Draft Updates of Existing MOU will be executed prior to start of operations
Local Law Enforcement Agency: Eunice Fire And Rescue	Memorandums of Understanding	Draft Updates of Existing MOU will be executed prior to start of operations
Local Law Enforcement Agency: Eunice NM Police Department	Memorandums of Understanding	Draft Updates of Existing MOU will be executed prior to start of operations
City Of Andrews	Memorandums of Understanding	Draft Updates of Existing MOU will be executed prior to start of operations

All Indicated Changes are in response to RAI RRP-1

LAND USE (LU)

RAI LU-1

Provide a figure showing land use classification as identified in the ER within 8 km [5 mi] of the proposed CISF boundaries.

ER Section 3.1 states that land use classification in the vicinity of the proposed CISF is primarily rangeland, built-up land, and barren land. Provide specific information on the distribution of classes of land use within and surrounding the proposed CISF. NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, recommends figures should be used to describe the area for land use (NRC, 2003). In addition, NUREG–1567, Standard Review Plan for Spent Fuel Dry Storage Facilities, recommends that land use should be described within an 8-km [5-mi] radius of independent spent fuel storage facilities (ISFSIs) (NRC, 2000). The requested information is needed to support the NRC staff's description of the affected environment and evaluation of environmental impacts in the EIS.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which requires that the ER include a description of the affected environment and discuss the impacts of the proposed action.

Response to RAI LU-1:

The United States Geological Survey (USGS) National Land Cover Database has data from 2016 that provides land uses in the project area. New ER Table 3.1-1 shows the land use types that appear within an 8 km (5 mile) radius of the project site, along with estimated acreages by land cover type.

New ER Table 3.1-2 shows the land use types that appear within the study area (these totals are a subset of the information shown in ER Table 3.1-1).

According to ER Table 3.1-1, approximately 97 percent of the land cover in the five-mile radius (more than 58.7k acres) is shrub/scrub. Developed, open space constitutes 1.5 percent of the land cover (902 acres) and all other land use categories that occur in this radius comprise less than one percent of the land cover.

In the Study Area, Table 3.1-2 shows that more than 99 percent of the land cover (322 acres) is shrub/scrub with just over one acre (0.4 percent) of barren land (rock/sand/clay).

New ER Figure 3.1-4 depicts where these various land use types occur. The land cover that is developed, open space occurs west of the study area near Eunice, New Mexico. Construction of the proposed facility would primarily convert Shrub/Scrub land to developed land uses.

ER Section 3.1 has been updated to reference the new Tables and Figure discussed above.

References:

1. United States Geological Survey (USGS), "National Land Cover Database, 2016-12-31." Web Accessed 2019-07-23: https://data.tnris.org/collection/89b4016e-d091-46f6-bd45-8d3bc154f1fc

Impact:

ER Section 3.1 has been revised and Tables 3.1-1 and 3.1-2, and Figure 3.1-4 have been added as described in the response.

The CISF would be located near the boundary between the Southern High Plains Section (Llano Estacado) of the Great Plains Province to the east and the Pecos Plains Section to the west. The boundary between the two sections is the Mescalero Escarpment, locally referred to as Mescalero Ridge. This part of Andrews County is a gently southeastward sloping plain with a natural slope of about 2.4 to 3 m (8 to 10 ft) per mi as seen on the topographic map in figure 3.1-2. The Elliott Littman oil field is to the northwest, the Freund and Nelson oil fields are to the south, the Paddock South and Drinkard oil fields are to the southwest, and the Fullerton oil field is to the east. *Figures 3.1-5, 3.1-6, and 3.1-7 show oil and gas wells within a 10 km radius of the proposed CISF. Figure 3.1-8 shows existing oil and gas leases within a 10 km radius of the proposed CISF.* On-site soils are primarily of the undulating Blakeney and Conger soil association (76%), the Triomas and Wicket soil association (8%), the Ratliff soil association (14%), and the Jalmar-Penwell association (2%). These soils consist of well drained, fine sandy loam and fine sand underlain by gravelly loam and cemented material. On-site soils are common to areas used for rangeland and wildlife habitat; see section 3.5, Ecological Resources in this ER for more information.

RAI LU-2

The ISP joint venture member Waste Control Specialists controlled property contains several permitted and licensed facilities. Waste Control Specialists has two approved RCRA permits from the TCEQ and a TSCA authorization from the EPA. Waste Control Specialists also possesses Radioactive Material Licenses (RML) for the management and disposal of Low-Level Radioactive Wastes (LLRW) and uranium Byproduct Material License, respectively.

Land uses within a few miles of the CISF include agriculture, cattle ranching, drilling for and production from oil and gas wells, quarrying operations, uranium enrichment, municipal waste disposal, and the surface recovery and land farming of oil field wastes. *The United States Geological Survey (USGS) National Land Cover Database has data from 2016 that provides land uses in the project area. Table 3.1-1 below shows the land use types that appear within an 8 km (5 mile) radius of the project site, along with estimated acreages by land cover type. Table 3.1-2 shows the land use types that appear within the Study Area (these totals are a subset of the information shown in Table 3.1-1).*

According to Table 3.1-1, approximately 97 percent of the land cover in the five-mile radius (more than 58.7k acres) is Shrub/Scrub. Developed, Open Space constitutes 1.5 percent of the land cover (902 acres) and all other land use categories that occur in this radius comprise less than one percent of the land cover.

RAI LU-

In the Study Area, Table 3.1-2 shows that more than 99 percent of the land cover (322 acres) is Shrub/Scrub with just over one acre (0.4 percent) of barren land (rock/sand/clay).

Table 3.1-1, Land Cover within Five-Mile Buffer

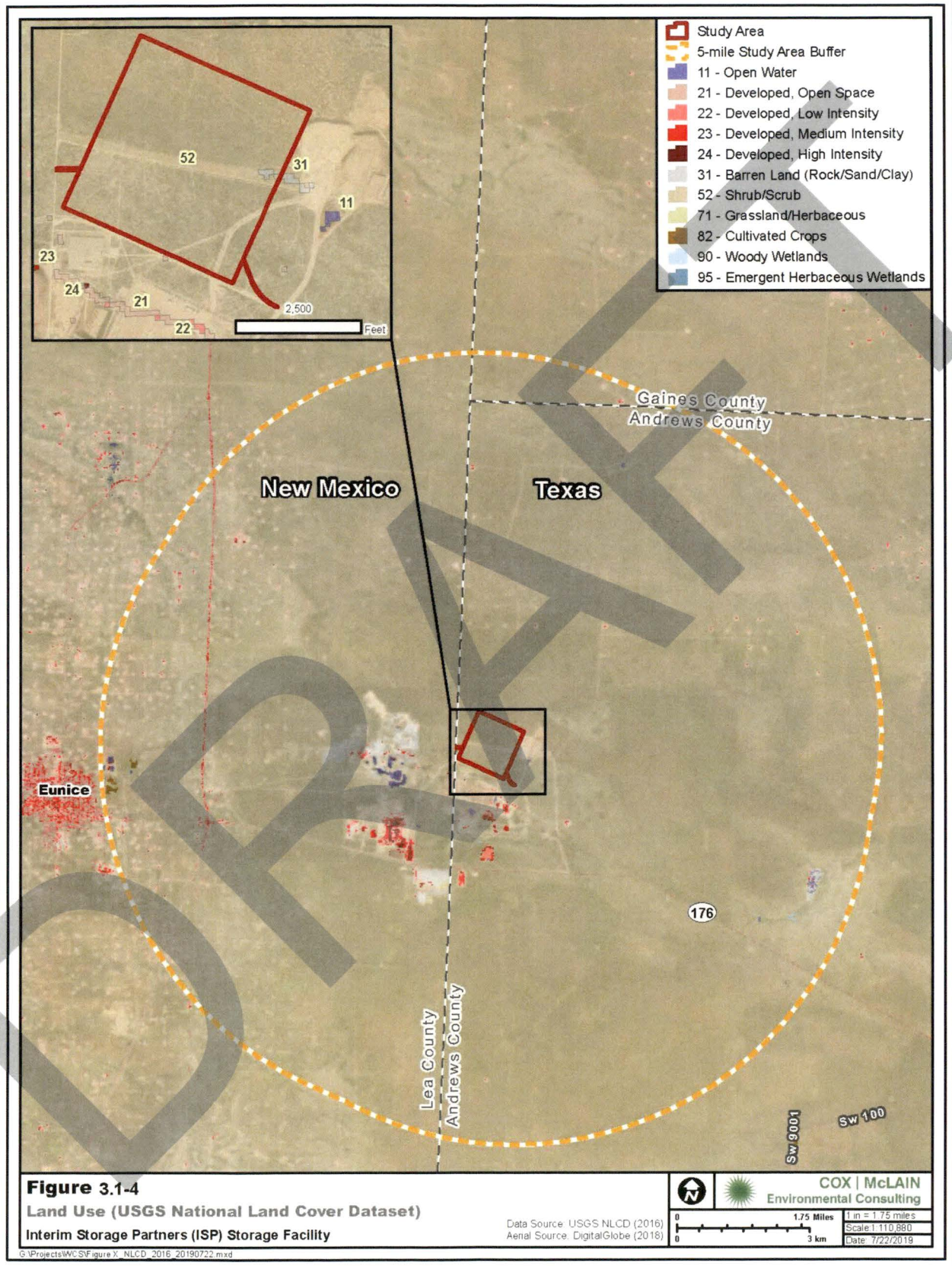
Land Cover Gridcode (Legend)	Land Cover - Class	Acres	% of Total
11	Open Water	73.8	0.1%
21	Developed, Open Space	902.0	1.5%
22	Developed, Low Intensity	229.2	0.4%
23	Developed, Medium Intensity	128.1	0.2%
24	Developed, High Intensity	49.8	0.1%
31	Barren Land (Rock/Sand/Clay)	300.0	0.5%
52	Shrub/Scrub	58,714.8	97.0%
71	Grassland/Herbaceous	99.8	0.2%
82	Cultivated Crops	17.8	0.0%
90	Woody Wetlands	7.3	0.0%
	Total	60,522.7	100.0%

Table 3.1-2, Land Cover within Five-Mile Buffer

Land Cover Gridcode (Legend)	Land Cover - Class	Acres	% of Total
31	Barren Land (Rock/Sand/Clay)	1.2	0.4%
52	Shrub/Scrub	321.8	99.6%
	Total	323.0	100.0%

The attached Figure 3.1-4 depicts where these various land use types occur. The land cover that is Developed, Open Space occurs west of the study area near Eunice, New Mexico. Construction of the proposed facility would primarily convert Shrub/Scrub land to developed land uses.

All Indicated Changes are in response to RAI LU-1



All Indicated Changes are in response to RAI LU-1

RAI LU-2

Provide information on the number and location of wells (including a figure) associated with oil and gas exploration and development within a 10-km [6-mi] radius of the proposed CISF. The figure should indicate the type of well (e.g., oil, gas, injection, salt water disposal, etc.) and its status (e.g., active, plugged, dry and abandoned, shut in, etc.). In addition, provide information on oil and gas leasing including a figure illustrating existing oil and gas leases within a 10-km [6-mi] radius of the proposed CISF.

ER Section 3.1 states that land uses within a few miles of the proposed CISF includes drilling for and production from oil and gas wells and that the Elliott Littman oil field is to the northwest, the Freund and Nelson oil fields are to the south, the Paddock South and Drinkard oil fields are to the southwest, and the Fullerton oil field is to the east. However, the ER does not provide specific information on the type, status, and location of the oil and gas wells in the area of the proposed CISF. Specifically, this information is needed to support the NRC staff's description of the affected environment and evaluation of environmental impacts.

This additional information is needed in accordance with 10 CFR 51.45(b), which requires that the ER include a description of the affected environment, and 10 CFR 51.45(b)(1), which requires that the ER discuss the impacts of the proposed action.

Response to RAI LU-2:

Information on oil and gas wells within a 10 km radius of the proposed CISF is provided in new ER Figures 3.1-5, 3.1-6, and 3.1-7. The proposed CISF location is shown as a red star on the figures. The figures include: 1) a summary figure with the Texas Land Survey overlay, showing the well locations, or cluster in the case of several wells, 2) well locations on a topographic overlay, and 3) well locations on a current aerial imagery overlay. Map information includes well or cluster location, well type (oil, oil/gas), dry hole, plugged oil, plugged gas, plugged oil/gas, permitted location, shut-in oil, shut-in gas, sidetrack surface location, horizontal drain hole, directional drilling surface location, injection/disposal well, injection/disposal from oil, injection disposal from gas, injection/disposal from oil/gas, canceled/abandoned location.

Detailed information on the subject oil and gas wells is also provided in Attachment LU-2-1, and as a native (spreadsheet) file format in Enclosure X. The information in the spreadsheet includes map well identification number, latitude/longitude, state (Texas or New Mexico), operator, well name and number (per operator filing), total depth (ft), production type (oil/gas, salt water injection (SWD), injection, injection/disposal, water storage, horizontal drain hole), American Petroleum Institute (API) number, status (active, plugged, approved/expired temporary abandonment, new-not drilled/completed, cancelled Application for Permit to Drill (APD) (approved permit to deepen/re-enter), dry hole, permitted location, completion date, and plugged date.

New ER Figure 3.1-8 provides current oil and gas leases within a 10 km radius of the proposed CISF, reproduced from the Midland Map Company's Current Lease and Ownership Map (2019), and this figure is also provided in Enclosure X.

ER Section 3.1 has been updated to provide reference to Figures 3.1-5, 3.1-6, 3.1-7, and 3.1-8.

Impact:

ER Section 3.1 has been revised, and ER Figures 3.1-5, 3.1-6, 3.1-7, and 3.1-8 have been added as described in the response.

The CISF would be located near the boundary between the Southern High Plains Section (Llano Estacado) of the Great Plains Province to the east and the Pecos Plains Section to the west. The boundary between the two sections is the Mescalero Escarpment, locally referred to as Mescalero Ridge. This part of Andrews County is a gently southeastward sloping plain with a natural slope of about 2.4 to 3 m (8 to 10 ft) per mi as seen on the topographic map in figure 3.1-2. The Elliott Littman oil field is to the northwest, the Freund and Nelson oil fields are to the south, the Paddock South and Drinkard oil fields are to the southwest, and the Fullerton oil field is to the east. *Figures 3.1-5, 3.1-6, and 3.1-7 show oil and gas wells within a 10 km radius of the proposed CISF. Figure 3.1-8 shows existing oil and gas leases within a 10 km radius of the proposed CISF.* On-site soils are primarily of the undulating Blakeney and Conger soil association (76%), the Triomas and Wicket soil association (8%), the Ratliff soil association (14%), and the Jalmar-Penwell association (2%). These soils consist of well drained, fine sandy loam and fine sand underlain by gravelly loam and cemented material. On-site soils are common to areas used for rangeland and wildlife habitat; see section 3.5, Ecological Resources in this ER for more information.

RAI LU-2

The ISP joint venture member Waste Control Specialists controlled property contains several permitted and licensed facilities. Waste Control Specialists has two approved RCRA permits from the TCEQ and a TSCA authorization from the EPA. Waste Control Specialists also possesses Radioactive Material Licenses (RML) for the management and disposal of Low-Level Radioactive Wastes (LLRW) and uranium Byproduct Material License, respectively.

Land uses within a few miles of the CISF include agriculture, cattle ranching, drilling for and production from oil and gas wells, quarrying operations, uranium enrichment, municipal waste disposal, and the surface recovery and land farming of oil field wastes. *The United States Geological Survey (USGS) National Land Cover Database has data from 2016 that provides land uses in the project area. Table 3.1-1 below shows the land use types that appear within an 8 km (5 mile) radius of the project site, along with estimated acreages by land cover type. Table 3.1-2 shows the land use types that appear within the Study Area (these totals are a subset of the information shown in Table 3.1-1).*

According to Table 3.1-1, approximately 97 percent of the land cover in the five-mile radius (more than 58.7k acres) is Shrub/Scrub. Developed, Open Space constitutes 1.5 percent of the land cover (902 acres) and all other land use categories that occur in this radius comprise less than one percent of the land cover.

RAI LU-

Proprietary Information on Pages 3-98 through 3-101
Withheld Pursuant to 10 CFR 2.390

RAI LU-2

RAI LU-3

Clarify the total site footprint (i.e., area) for the proposed CISF, including the area that would contain the new rail siding, and indicate whether the calculated total disturbed area and total disturbed soils take the rail siding into account.

ER Section 3.1 states that the proposed CISF would include 130 ha [320 ac] of land within the WCS property boundary. However, the description of the land area does not explicitly state whether the area includes land for the new rail siding. Therefore, clarification is needed on both the total land and soil areas disturbed by the proposed action (including the new rail siding). This information is needed to support the NRC staff's description of the proposed action and evaluation of environmental impacts in the EIS.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which requires that the ER include a description of the affected environment and discuss the impacts of the proposed action.

Response to RAI LU-3:

The CISF Owner Controlled Area (OCA) includes 130 ha [320 ac] of land within the Waste Control Specialists property boundary. In addition to the OCA, the following features would add to the total disturbed soils area:

Railroad Side Track - The railroad side track is updated as indicated in ISP Response to RAI PA-1. The majority of the railroad side track is located within the OCA. Approximately ¼ of a mile of railroad extends beyond the OCA boundary before it connects to the existing Waste Control Specialists railroad line.

Site Access Road - A Site Access Road would extend beyond the OCA. Approximately one mile of road extends south before it connects to existing Waste Control Specialists access roads.

Construction Lay Down Area – During construction an area south of the CISF OCA may be used for staging equipment and supplies.

Soil disturbing activities associated with construction of the CISF inside and outside the OCA include:

- 130 ha (320 acres) for the OCA, including all facility building and storage pads
- 0.6 ha (1.5 acres) for the rail side track outside of the OCA
- 1.2 ha (3 acres) for construction of the 1.6 km (1 mi) long site access road
- 1.6 ha (4 acres) for a construction lay down area south of the CISF

The total disturbed soil area is approximately 133.4 ha (330 acres)

Impact:

ER Sections 1.3.2 and 3.1 have been revised as described in the response.

- 49 CFR Part 171, General Information, Regulations, and Definitions
- 49 CFR Part 172, *Hazardous Materials Tables, Special Provisions, Hazardous Material Communication, Emergency Response Information, and Training Requirements*
- 49 CFR Part 177, *Carriage by Public Highway*
- 49 CFR Part 107 Subpart G (registration/fee to DOT as a person who offers or transports hazardous materials)

1.3.2 State of Texas

At the state level, the environmental permitting of the CISF, which is located on ISP joint venture member Waste Control Specialists property, which will be subject to a long term lease to ISP, is primarily governed by the TCEQ. The following is a summary of environmental permitting activities to be undertaken with TCEQ.

1.3.2.1 Surface Water Protection

In order to protect jurisdictional waters from pollutants that could be conveyed in construction-related storm water runoff, TCEQ enabling regulations require construction projects disturbing five or more acres of soil to secure coverage under a Texas Pollutant Discharge Elimination System (TPDES) permit authorizing construction-related storm water discharges.

The Owner Controlled Area (OCA) at the CISF is approximately 130 ha (320 acres). The CISF would require removal of vegetation in areas both within and outside of the OCA. The majority of construction-related operations at the CISF would be performed inside of the OCA. In order to protect surface water from construction-related storm water runoff for large construction activities which disturb five or more acres, or are part of a larger common plan of development that would disturb five or more acres, the TCEQ regulates the proper disposition of storm water with the Construction General Permit (CGP TXR150000). The construction operator would file and implement a Stormwater Pollution Prevention Plan (SWPPP) and a Notice of Intent (NOI) in accordance with CGP TXR150000.

Soil disturbing activities associated with construction of the CISF inside and outside the OCA include:

- 130 ha (320 acres) for the OCA, including all facility building and storage pads
- *0.6* ha (*1.5* acres) for the rail side track

All Indicated Changes are in response to RAI LU-3

- 1.2 ha (3 acres) for construction of the 1.6 km (1 mi) long site access road
- 1.6 ha (4 acres) for a construction lay down area south of the CISF

Thus, approximately *133.4* ha (*330* acres) of soil would be disturbed during construction of the CISF and ancillary facilities on the site.

The NOI would provide general information about the site such as name, location, dates, and other general information relevant to the nature of the construction activities. Provisional coverage under CGP TXR150000 begins seven days after the completed storm water permit application NOI is postmarked for delivery to the TCEQ or immediately if the completed NOI is submitted electronically using the State of Texas Environmental Electronic Reporting System (STEERS). However, prior to filing an NOI, the construction operator must complete development and preparation of the SWPPP for the permitted construction site according to the provisions of this general permit. The SWPPP must include appropriate controls and measures to reduce erosion and discharge of pollutants in stormwater runoff from the construction support activities. The construction operator must also ensure the proper posting at the construction site of the CGP TXR150000 General Permit required "Large Construction Site Notice".

Implementation of the SWPPP requirements would occur prior to any discharge and continue until permit termination. Within the SWPPP, there would be provisions outlining erosion and sediment controls, soil stabilization practices, structural controls, and other best management practices (BMPs) that would be employed during construction to protect offsite waters from adverse impacts from construction-related activities and mitigate any storm water runoff. The SWPPP would also outline maintenance and inspection requirements and identify BMPs for the effective management of storm water runoff.

The SWPPP would be maintained onsite throughout the construction process and would be updated as appropriate. This document would also be made available for review, upon request, to the TCEQ, NRC, and other authorized individuals.

Once construction has been completed, a separate TPDES permit is not required for the operation of the CISF since facility operations would not result in the discharge of process wastewater. In addition, facility operations are not subject to stormwater permit regulations.

A Spill Prevention, Control, and Countermeasures Plan (SPCC) may need to be developed since all diesel fuel storage tanks at the CISF would be placed above the ground. This fuel tank

All Indicated Changes are in response to RAI LU-3

CHAPTER 3

DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter provides information and data for the affected environment at the proposed CISF and surrounding vicinity. Topics include land use (3.1), transportation (3.2), geology and soils (3.3), water resources (3.4), ecological resources (3.5), meteorology, climatology, and air quality (3.6), noise (3.7), historic and cultural resources (3.8), visual and scenic resources (3.9), socioeconomics (3.10), environmental justice (3.11), public and occupational health (3.12), and waste management (3.13).

3.1 LAND USE

This section describes land uses near the proposed CISF. It also provides a discussion of off-site areas and the regional setting and includes a map of major land use areas. Major transportation corridors are identified in Section 3.2.

ISP joint venture member Waste Control Specialists controls approximately 5,666 ha (14,000 acres) of land in northwestern Andrews County. Within this property boundary, Waste Control Specialists currently operates a commercial waste management facility on approximately 541 ha (1,338 acres) of land (the existing facility). The CISF would be located north of and adjacent to the existing facility, approximately 300 m (984 ft) from the north edge of the rail loop as seen in Figure 3.1-1. The approximate coordinates for the centroid of Phase I of the CISF facility are Latitude 32° 27' 08" N and Longitude 103° 03' 35" W with an elevation of 1,043.587 m (3,423.843 ft) above mean sea level (msl). The portion of the Waste Control Specialists land on which the WCS CISF would be constructed and operated would be controlled by ISP through a long term lease from ISP joint venture member Waste Control Specialists.

The proposed CISF would be a *133.4 ha (330 acre) facility* situated within Andrews County, north of Texas State Highway 176, about 0.6 km (0.37 mi) from the Texas/New Mexico state line (Figure 3.1-1). It is located north of Waste Control Specialists' existing radioactive waste storage, processing, and disposal facilities and is surrounded by Waste Control Specialists' controlled property. The proposed CISF is currently unfenced, except for a gravel-covered road and a railroad spur that borders the south side of the property, and it is undeveloped.

All Indicated Changes are in response to RAI LU-3

GEOLOGY and SOILS (GS)

RAI GS-1

Describe erosion and sediment controls, soil stabilization practices, or structural controls that would be implemented during operation.

ER Section 4.3 identifies increased soil erosion as the result of construction activities due to site clearing and grading. ISP should identify and describe the planned best management practices (BMPs) that it will use to mitigate erosional impacts throughout the life of the CISF site. The additional information about BMPs would be used to assess the potential environmental impacts due to operation of the proposed CISF.

This additional information is needed in accordance with 10 CFR 51.45(b) and (c), which requires that the ER include a discussion of the impacts to the environment and alternatives available for reducing or avoiding adverse environmental effects.

Response to RAI GS-1:

ISP would utilize various temporary and permanent planned best management practices (BMPs) throughout all stages of the CISF facility including silt fences, diversion ditches, berms, designated concrete wash out locations, designated tire washout locations, straw bales, check dams, and straw mats. BMPs for the construction phases and operational phases of the facility are detailed in Section 4.1 of the ER. Section 4.3 of the ER has been updated to include a reference to Section 4.1 of the ER for the BMPs.

Rainfall records from July 2009 through December 2015, provided by Waste Control Specialists from a weather station near the CISF site, indicate an average annual rainfall of 12.6 inches and a maximum twenty-four hour rainfall total of 3.62 inches (Attachment A of the SAR). With an average annual evaporation rate of approximately 70 inches per year and the high infiltration rates given the relatively permeable soil at the CISF, rainfall events that could cause significant erosion are infrequent.

Berms and ditches upgradient of the storage area will be constructed of on-site available compacted red bed clay and armored with on-site available caliche in order to minimize erosion and seepage. The construction of the berms and ditches will occur during the first phase of the facility. Additional berms and ditches will not be needed for later phases. Inspection of the berms for erosion and ditches for sediment buildup will be part of the ongoing routine inspection operations for the facility during all phases. The area between the berms and the storage pads will also be routinely inspected for erosion, especially after a rainfall. Areas of the site impacted by erosion and sediment buildup will be repaired to original grades. Inspection and maintenance will occur after normal and extreme precipitation events and through all phases of the facility.

Impact:

ER Section 4.3 has been revised as described in the response.

The site terrain currently ranges in elevation from 1067, to 1052, m (3520, to 3482, ft) msl, respectively. *The existing proposed CISF area is undeveloped and the land surface is fairly flat with an average slope of 0.8% towards the southeast. The cut and fill activities proposed for the CISF will allow construction and operation of the facility and maintain overall grading and drainage in the same direction as the existing undeveloped area. Excavation and backfill activity will mostly be focused in the 133 acres of the Protected Area. A net volume of approximately 700,000 cubic yards is anticipated to be excavated and stockpiled. The majority of this material (approximately 650,000 cubic yards) will be excavated as a result of site grading. The remaining excavation will be a result of drainage berm and ditch construction, storage pad and building construction, and rail side track construction. Material will be stockpiled at the existing material stockpile northeast of the proposed CISF. Figures 2.26, 2.27, 2.28, 2.29, 2.30, 2.31, 2.32, and 2.33 of Chapter 2, "Site Characteristics," of the Safety Analysis Report (ISP 2019) show plans and profiles for the extent of excavation and backfill as part of construction and final grading.*

RAI GS-2

AI GS-1

Surface storm water runoff for the permanent facility would be controlled by an engineered drainage system. Those controls would essentially eliminate any potential for significant discharge of runoff from the CISF site. Construction activities may cause some short-term increases in soil erosion at the site, although rainfall in the region is limited. Erosional impacts due to site clearing and grading would be mitigated by utilization of construction and erosion control BMPs *as detailed in Section 4.1 of the ER*. Disturbed soils would be stabilized as part of construction work. Earth berms, dikes, and sediment fences would be utilized as necessary during all phases of construction to limit runoff.

CISF construction and operation will require minimal disturbance to the subsurface and should be limited to the upper 3 m (10 ft). Construction and operation activities being limited to the upper 3 m (10 ft) will create little disruption to the subsurface and should not produce any induced seismic activity or affect subsurface faults in a way that may result in the accidental discharge of radioactive materials or other contaminants into the groundwater table and surrounding areas. *Effects of the site grading and excavation on stratigraphy will involve removal of the cover sands and part of the Blackwater Draw caliche.*

RAI GS-2

Much of the excavated areas would be covered by structures or paved, limiting the creation of new dust sources. Watering would be used to control potentially fugitive construction dust. Water conservation would be considered when deciding how often dust suppression sprays would be applied. The Andrews County Soils Survey describes soils found at the CISF site as

RAI GS-2

Describe the land surface modification proposed, including the volume of material to be excavated and redistributed and how the natural topography and stratigraphy of the proposed CISF project area would be modified during site leveling.

ER Section 4.3 (Geology and Soils) states that cut-and-fill activities might be required for some portions of the site. Provide information about the land areas that would be leveled and the potential volumes of material that would be exhumed and or redistributed to level the site. ER Section 4.1 (Land Use Impacts) stated "[d]uring the construction phase of the CISF, conventional earthmoving and grading equipment would be used. The removal of very dense soil or caliche may require the use of heavy equipment with ripping tools. Soil removal work for foundations would be controlled to reduce over-excavation to minimize construction costs. In addition, loose soil and/or damaged caliche would be removed prior to installation of foundations for seismically designed structures." Additional information about ISP's land surface modification, including details about how the natural topography and stratigraphy at the site would be modified by the proposed action, is needed to assess the potential environmental impacts due to construction and operation of the proposed CISF.

This additional information is needed in accordance with 10 CFR 51.45(b) and (c), which requires that the ER include a discussion of the impacts of the proposed action and the alternatives available for reducing or avoiding adverse environmental effects.

Response to RAI GS-2:

The proposed surface modification involves soil disturbance to the approximately 330 acres described in the Response to RAI LU-3. The areas of primary disturbance include the protected area, rail side track, access road, and contractor laydown yard. Some level of clearing and grubbing will occur in all of the 330 acres with excavation and backfill mostly focused in the 133 acres of the protected area. In this location, soil will be removed to achieve the final grades required by the Flood Plain Analysis contained in WCS CISF SAR Chapter 2, Appendix B. Plans and profiles showing the extent of excavations and backfill are shown in the WCS CISF SAR Figures 2-26, 2-27, 2-28, 2-29, 2-30, 2-31, 2-32, and 2-33. Excavation activities include site grading, drainage berm and ditch construction, foundation work for storage pads and buildings, and rail construction. Excavation for site grading varies with the maximum depth approximately 7 feet in some areas. Average excavation over the entire area is approximately 3 feet, which results in a volume of approximately 650,000 cubic yards of material. Excavation for all other features is approximately 50,000 cubic yards. Total excavated material to be stockpiled is approximately 700,000 cubic yards. Backfill will be minimal. Material will be stockpiled at the existing material stockpiles northeast of the proposed CISF location.

The existing CISF storage area is undeveloped and the existing land surface is nearly flat with an average slope of 0.8% toward the southeast. Cut and fill activities proposed for the CISF will allow construction and operation of the facility and maintain overall grading and drainage in the same direction as the existing undeveloped area.

Effects of the excavation on stratigraphy will involve removal of the cover sands and part of the Blackwater Draw caliche.

ER Section 4.3 has been updated to include a summary of the above information.

The relatively shallow depth of excavation will be accomplished with conventional earth moving equipment. In localized areas, deeper excavation may be required for building foundations. Some of the caliches encountered may require using equipment with ripping tools or hydraulic hammers.

ER Section 4.1 is updated to clarify that it is anticipated that excavation will be limited to the cover sands and Blackwater Draw caliche, however if hard caliche is encountered, heavy equipment with ripping tools may be utilized.

Impact:

ER Sections 4.1 and 4.3 have been revised as described in the response.

CHAPTER 4

ENVIRONMENTAL IMPACTS

4.0 ENVIRONMENTAL IMPACTS

This chapter evaluates the potential environmental impacts associated with the construction, operation, and decommissioning of the proposed CISF. The chapter is divided into sections that assess the impact to each resource described in Chapter 3, Description of the Affected Area. These include land use (4.1), transportation (4.2), geology and soils (4.3), water resources (4.4), ecological resources (4.5), air quality (4.6), noise (4.7), historic and cultural resources (4.8), and visual and scenic resources (4.9), socioeconomics (4.10), environmental justice (4.11), public and occupational health (4.12), and waste management (4.13).

RAI PA-1

4.1 LAND USE IMPACTS

The proposed CISF would be built on land leased to Interim Storage Partners (ISP) by Waste Control Specialists LLC. The facility would be built in eight phases, with one phase being completed approximately every 2.5 years. Initial construction of Phase One would encompass approximately 63 ha (155 acres). Each phase would increase the overall footprint incrementally until the final footprint reaches approximately 130 ha (320 acres) with the completion of Phase Eight, of the owner controlled area. *In addition to the owner controlled area, there is an additional 0.6 ha (1.5 acres) of area for the new railroad side track which will be outside of the OCA and 1.2 ha (3 acres) of area for a new access road.* Because the site is currently undeveloped, potential land use impacts would primarily be from site preparation and construction activities. Approximately *1.6 ha (4 acres)* would be used for contractor parking and lay-down areas during facility construction. The total disturbed area would therefore be approximately *133.4 ha (330 acres)* including the contractor parking and lay-down area. The contractor lay-down and parking area would be restored after completion of facility construction.

During the construction phase of the CISF, conventional earthmoving and grading equipment would be used. *It is anticipated that excavation will be limited to the cover sands and Blackwater Draw caliche, however if hard caliche is encountered, heavy equipment with ripping tools may be utilized.* Soil removal work for foundations would be controlled to reduce over-excavation to minimize construction costs. In addition, loose soil and/or damaged caliche would be removed prior to installation of foundations for seismically designed structures.

RAI GS-2

The site terrain currently ranges in elevation from 1067, to 1052, m (3520, to 3482, ft) msl, respectively. *The existing proposed CISF area is undeveloped and the land surface is fairly flat with an average slope of 0.8% towards the southeast. The cut and fill activities proposed for the CISF will allow construction and operation of the facility and maintain overall grading and drainage in the same direction as the existing undeveloped area. Excavation and backfill activity will mostly be focused in the 133 acres of the Protected Area. A net volume of approximately 700,000 cubic yards is anticipated to be excavated and stockpiled. The majority of this material (approximately 650,000 cubic yards) will be excavated as a result of site grading. The remaining excavation will be a result of drainage berm and ditch construction, storage pad and building construction, and rail side track construction. Material will be stockpiled at the existing material stockpile northeast of the proposed CISF. Figures 2.26, 2.27, 2.28, 2.29, 2.30, 2.31, 2.32, and 2.33 of Chapter 2, "Site Characteristics," of the Safety Analysis Report (ISP 2019) show plans and profiles for the extent of excavation and backfill as part of construction and final grading.*

RAI GS-2

AI GS-1

Surface storm water runoff for the permanent facility would be controlled by an engineered drainage system. Those controls would essentially eliminate any potential for significant discharge of runoff from the CISF site. Construction activities may cause some short-term increases in soil erosion at the site, although rainfall in the region is limited. Erosional impacts due to site clearing and grading would be mitigated by utilization of construction and erosion control BMPs *as detailed in Section 4.1 of the ER*. Disturbed soils would be stabilized as part of construction work. Earth berms, dikes, and sediment fences would be utilized as necessary during all phases of construction to limit runoff.

CISF construction and operation will require minimal disturbance to the subsurface and should be limited to the upper 3 m (10 ft). Construction and operation activities being limited to the upper 3 m (10 ft) will create little disruption to the subsurface and should not produce any induced seismic activity or affect subsurface faults in a way that may result in the accidental discharge of radioactive materials or other contaminants into the groundwater table and surrounding areas. *Effects of the site grading and excavation on stratigraphy will involve removal of the cover sands and part of the Blackwater Draw caliche.*

RAI GS-2

Much of the excavated areas would be covered by structures or paved, limiting the creation of new dust sources. Watering would be used to control potentially fugitive construction dust. Water conservation would be considered when deciding how often dust suppression sprays would be applied. The Andrews County Soils Survey describes soils found at the CISF site as

RAI GS-3

Correlate the U.S. Department of Agriculture (USDA) soil types inferred on the proposed CISF site with the material property data that ISP collected from 18 onsite soil test borings.

A site-specific soil survey of the proposed CISF site has not been performed. Four soil types were previously inferred by USDA to occur on the proposed CISF site; it is unknown how the average material properties associated with these four soil types compare with the actual material properties of soils recently tested onsite. ISP should provide additional information to correlate between the inferred USDA soil types and the recent material property data obtained from onsite soil borings.

This additional information is needed in accordance with 10 CFR 51.45(b), which requires that the ER include a description of the affected environment.

Response to RAI GS-3:

The inferred soil types for the proposed CISF in the USDA Natural Resources Conservation Service Custom Soil Resource Report (ER Attachment 3-2) are consistent with the logs of onsite borings. However, it is expected that the surface soil material will be removed during re-grading of the site to prepare the site for construction, and during construction of each pad (see RAI Response PA-1 regarding excavation of deleterious material).

Geoservices advanced 18 boreholes in the Phase I and facilities areas, logging the upper approximately 0 to 5 feet as silty sand with caliche (WCS CISF SAR, Attachment E). These borings were all located within an area where Blakeney and Conger soils are inferred by the USDA Soil Survey (ER Figure 4.3-1). Table 3 of the USDA Soil Resource Report lists the percent of soil passing a No. 200 sieve for the Blakeney and Conger soils as ranging from 40 to 75 percent. The Geoservices Report in Appendix B lists the material properties from soil samples taken from the upper 5 feet as having 35 to 48 percent passing a No. 200 sieve, which is mostly within range of what is expected for the Blakeney soils according to the USDA Soil Resource Report. Previous onsite boring logs (WCS CISF SAR, Attachment C) where the Blakeney and Conger soils occur (TP-64, TP-84, TP-76, PZ-36 and TP-65) note 1 to 2 feet of dry, tan sandy silt overlying caliche, which is in agreement with the USDA description of the Blakeney and Conger soils as 0 to 18 inches of brown, fine sandy loam underlain by white, strongly cemented caliche. Previous onsite boring logs where the Jalmar-Penwell association occurs (PZ-46 and PZ-47) indicate 4 to 6 ft of orangish-tan, well-sorted sand, consistent with the USDA description of Jalmar-Penwell soils as sand to sandy-loam ranging in color from brown to reddish-yellow and extending to depths around 85 inches. There are no onsite borings that verify the characteristics of either the Ratliff or Triomass and Wickett soils which together occupy about 38 percent of the proposed CISF footprint. Based on the consistency between the USDA and recent and previous onsite boring descriptions, these soils are likely similar to the loam and fine sandy clay loam descriptions in the USDA report.

ER Section 4.3 has been updated to include the above information.

Impact:

ER Section 4.3 has been revised as described in the response.

4.3 GEOLOGY AND SOILS IMPACTS

Geoservices advanced 18 boreholes in the CISF Phase I and facilities areas, logging the upper 5 ft as silty sand with caliche (WCS CISF SAR, Attachment E). These borings were all located within an area where Blakeney and Conger soils are inferred by the USDA Soil Survey (ER Figure 4.3-1). Table 3 of the USDA Soil Resources Report lists the percent of soil passing a No. 200 sieve for the Blakeney and Conger soils as ranging from 40 to 75 percent. The Geoservices Report in Appendix B of the SAR lists the material properties from soil samples taken from the upper 5 feet as having 35 to 48 percent passing a No. 200 sieve, which is mostly within range of what is expected for the Blakeney soils according to the USDA Soil Resource Report (ER Attachment 3-2). Previous onsite boring logs (WCS CSIF SAR, Attachment C) where the Blakeney and Conger soils occur (TP-64, TP-84, TP-76, PZ-36, and TP-65) note 1-2 ft of dry, tan sandy silt overlying caliche, which is in agreement with the USDA description of the Blakeney and Conger soils as 0-18 inches of brown, fine sandy loam underlain by white, strongly cemented caliche. Previous onsite boring logs where the Jalmar-Penwell association occurs (PZ-46 and PZ-47) indicate 4 to 6 ft of orangish-tan, well-sorted sand, consistent with the USDA description of Jalmar-Penwell soils as sand to sandy-loam ranging in color from brown to reddish-yellow and extending to depths around 85 inches. There are no onsite borings that verify the characteristics of either the Ratliff or Triomass and Wickett soils which together occupy about 38% of the proposed CISF footprint. Based on the consistency between the USDA and recent and previous onsite boring descriptions, these soils are likely similar to the loam and fine sandy clay loam descriptions in the USDA report.

Subsurface geologic materials at the CISF site generally consist of competent clay red beds. The clay red beds are covered with about 6.7 to 16 m (22 to 54 ft) of silty sand, sand, sand and gravel, and alluvium that are part of the *Ogallala* and/or Antlers Formation *overlain by the Blackwater Draw Formation.* Foundation conditions at the site are generally good and no potential for mineral development exists or has been found at the site.

All Indicated Changes are in response to RAI GS-3

RAI GS-4

Using available data from oil and gas well logs and any other available sources such as geophysical surveys, provide information on the depth and thickness of oil- and gas-producing geologic formations within a 10 km [6 mi] radius of the proposed CISF.

ER Section 3.1 states that land uses within a few miles of the proposed CISF includes drilling for and production from oil and gas wells. Provide information on oil- and gas-producing formations, such as depth and thickness, in the vicinity of the proposed CISF.

This additional information is needed in accordance with 10 CFR 51.45(b), (b)(1), and (c), which requires that the ER include a description of the affected environment, discuss the impacts of the proposed action, and contain sufficient data to aid the NRC in its development of an independent analysis.

Response to RAI GS-4:

[ ]

Figure GS-4-1
Generalized Map of Producing Zones in The Vicinity of the Proposed CISF
(red star)

Figure GS-4-2
Permian Basin Pay Zones and Abbreviations Used on Map of Producing Zones.

Figure GS-4-3
Permian Basin Stratigraphic Chart

Impact:

ER Section 3.1 has been revised and Table 3.1-3 has been added as described in the response.

The Permian Basin Materials sand and gravel quarry and a large spoil pile are located west of the proposed CISF. Approximately 1.6 km (1 mi) west and adjacent to the quarry is the Sundance Services oil recovery and solids disposal facility. DD Landfarm, a non-hazardous oilfield waste disposal facility that closed in August 2013 and is undergoing decommissioning and post-closure monitoring, is located approximately 4 km (2.5 mi) west of the proposed CISF. Vacant land situated immediately to the north and east supports oil and gas production. Cattle are not allowed to graze on land controlled by Waste Control Specialists; however, cattle grazing on other nearby properties occur throughout the year. Approximately 2.5 km (1.6 mi) southwest of the proposed CISF, in Lea County, New Mexico, is the URENCO NEF. This plant enriches natural uranium by centrifuge for the commercial nuclear power industry. The Lea County Sanitary Waste Landfill is located approximately 3 km (1.8 mi) south/southwest of the proposed CISF, across New Mexico Highway 176, just across the Texas-New Mexico state line. Land further north, south and west has been mostly developed by the oil and gas industry. *Table 3.1-3 provides information on the depth and thickness of oil and gas producing geologic formations within a 10 km (6 mi) radius of the proposed CISF.* Land further east is ranchland.

All Indicated Changes are in response to RAI GS-4

Table 3.1-3, Oil and gas production intervals within a 10 km radius of the proposed CISF.

Although various crops are grown within Andrews County, Texas and Lea County, New Mexico, local and county officials report there is no agricultural activity in the vicinity of the proposed CISF, except for domestic livestock ranching. The principal livestock for both Andrews and Lea counties is cattle. Milk cows comprise a substantial portion of the cattle in Lea County; however, the nearest dairy farms are about 32 km (20 mi) northwest of the proposed CISF, near the city of Hobbs, New Mexico. There are no milk cows in Andrews County, Texas. The number of farms and acres of farmland decreased slightly within Lea County between 1992 and 1997, whereas the number of farms in Andrews County increased during this same timeframe.

RAI GS-5

Provide information on deep well injection of wastewater at or near the proposed CISF. This information should include the number and location of injection wells within a 10-km [6-mi] radius of the proposed project area. For each identified injection well, provide information on the geologic formation that wastewaters are being injected into, the depth and thickness of the targeted geologic formation, and injected wastewater volumes and rates.

ER Section 3.1 states that land uses within a few miles of the proposed CISF includes drilling for and production from oil and gas wells, and identifies oil fields northwest, south, southwest, and east of the proposed CISF. The requested information would be used to more accurately describe these current activities in the affected environment.

This additional information is needed in accordance with 10 CFR 51.45(b) and (c), which requires that the ER include a description of the affected environment and contain sufficient data to aid the NRC in its development of an independent analysis.

Response to RAI GS-5:

The response to RAI LU-2 provides detailed information on injection of produced water or wastewater from the oil and gas industry. All of the wells labelled as 'injection' in Attachment LU-2-1 to RAI Response LU-2 are Class II UIC injection wells, used for secondary oil recovery. This RAI (GS-5) requests information on deep well injection of wastewater, interpreted to mean wastewater from other than the oil and gas industry, commonly referred to as Class I UIC injection wells.

There are no permitted Class I deep injection wells in Andrews County (Reference [1]). There are no permitted Class I deep injection wells in Lea County within 10 km of the proposed CISF (Reference[2]).

References:

1. TCEQ, 2019, pers. comm. August 9, 2019, Email from Texas Commission on Environmental Quality to M. Hubbard, INTERA Inc. re: Class I Well Locations.

2. NM OCD, 2019, pers. comm. August 9, 2019, Email from New Mexico Oil Conservation Division to M. Hubbard, INTERA Inc. re: Class I Well Locations.

Impact:

No change as a result of this RAI.

WATER RESOURCES (WR)

RAI WR-1

Obtain and provide a new U.S. Army Corps of Engineers (USACE) determination documenting the lack of jurisdictional wetlands at and adjacent to the proposed CISF.

The USACE letter concerning "Waste Control Specialists Disposal Site-Non-Jurisdictional Determination Request" (WCS Project No. SWF-2007-173) supplied in ISP's license application states that the determination was valid for 5 years. The determination, therefore, expired in 2012. Updated surface water information is needed for the NRC staff to assess the potential environmental impacts to surface and groundwater near the proposed CISF.

This additional information is needed in accordance with 10 CFR 51.45(d), which requires that the ER include a list all Federal permits, licenses, approvals, and other entitlements that the applicant must obtain and a description of the status of compliance with these requirements.

Response to RAI WR-1:

Waste Control Specialists obtained a new USACE determination to document the lack of jurisdictional wetlands at and adjacent to the proposed CISF. Environmental Report (ER) Section 4.4 has been updated to reference the new letter dated June 24, 2019 and the letter is included in Attachment 3-3 Agency Consultation.

Impact:

ER Section 4.4 and Attachment 3-3 have been revised as described in the response.

- TPDES General Permit for Construction Storm Water: Because construction of the CISF would involve the disturbance of no more than 40 ha (100 acres) of land, a TPDES Construction General Permit from the TCEQ and an oversight review by the EPA Region 6 is required. ISP would develop a SWPPP and file a NOI with the TCEQ in Austin, TX prior to the commencement of construction activities.

RAI WR-1

- Section 401 Certification: Under Section 401 of the federal Clean Water Act, states can review and approve, approve with conditions, or deny all federal permits or licenses that might result in a discharge to State waters, including wetlands. A 401 certification confirms compliance with the State water quality standards. Activities that require a 401 certification include Section 404 permits issued by the U. S. Army Corps of Engineers (USACE). The State of Texas has a cooperative agreement and joint application process with the USACE relating to 404 permits and 401 certifications. By letter dated *June 24, 2019*, the USACE notified ISP joint venture member Waste Control Specialists of its determination that there are no USACE jurisdictional waters at the Waste Control Specialists site *or the proposed CISF* and for this reason the project does not require a 404 permit. As a result, a Section 401 certification is not required.

RAI WR-4

Collection and discharge of storm water runoff would be directed to the natural drainage network. The overall site would be graded to match the existing natural drainage and to prevent standing water at the CISF. The storm water runoff would be directed away from the facility and toward *existing drainage patterns. A detailed site-specific topographic map with 1 ft contour intervals based on aerial survey flown May 29, 2014 is provided in Figure 4.4-1. The map illustrates the proposed CISF and the specific location of the surface water drainage divide between the Rio Grande (Pecos Valley) and Colorado River Basins and confirms the proposed CISF location is entirely within the Rio Grande River Basin. See the CISF Drainage Evaluation and Floodplain Analysis in SAR Chapter 2 Attachment B regarding runoff and drainage.*

Industrial construction at the CISF site would create a short-term risk with regard to a variety of operations and constituents used in construction activities. BMPs would assure storm water runoff related to construction activities would be detained prior to release to the surrounding land surface. BMPs would also be used for dust control associated with excavation and fill operations during construction. Impact from storm water runoff generated during plant operations is not expected to differ substantially from impacts currently experienced at the site. The water quality of the discharge from the site storm water would be typical of runoff from building roofs and paved areas from any industrial facility. Except for small amounts of oil and

ATTACHMENT 3-3
AGENCY CONSULTATION

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

June 24, 2019

Regulatory Division

SUBJECT: Project Number SWF-2019-00145, Consolidated Interim Storage Facility

Mr. Jay Britten
Interim Storage Partners
Waste Control Specialists LLC
9998 W. Highway 176
Andrews, Texas 79714

Dear Mr. Britten:

This letter is in regard to the information received April 15, 2019, and subsequent submittal dated May 16, 2019, concerning the proposed by Interim Storage Partners to construct an interim storage facility adjacent to Waste Control Specialists, LLC facilities located in Andrews County, Texas. This project has been assigned Project Number SWF-2019-00145. Please include this number in all future correspondence concerning this project.

We have reviewed the site in question in accordance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Under Section 404, the USACE regulates the discharge of dredged and fill material into waters of the United States, including wetlands. Our responsibility under Section 10 is to regulate any work in, or affecting, navigable waters of the United States.

Based on the report that you submitted, and other information available to us, waters of the United States under Section 404 do not exist on the site. We concur with the delineation of waters that is made in the above referenced report. This approved jurisdictional determination (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 delineation before the expiration date.

This determination does not convey any property rights, either in real estate or material or any exclusive privileges, nor does it authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations. This determination does not eliminate the requirements to obtain State or local permits or approvals as needed.

Department of the Army authorization would be required for the discharge of dredged or fill material into any areas identified as waters of the United States. If you anticipate a discharge, please provide us with a detailed description of the proposed project, a suitable map of the proposed project area showing the location of proposed discharges, the type and amount of material (temporary or permanent), if any, to be discharged, and plan and cross-section views of

All Indicated Changes are in response to RAI WR-1

the proposed project. Please note that it is unlawful to start work without a Department of the Army permit if one is required.

The Applicant may accept or appeal this approved JD or provide new information in accordance with the enclosed Notification of Administration Appeal Options and Process and Request for Appeal (NAAOP-RFA). If the Applicant elects to appeal this approved JD, the Applicant must complete Section II (Request for Appeal or Objections to an Initial Proffered Permit) of the enclosure and return it to the Division Engineer, ATTN: CESWD-PD-O Appeals Review Officer, U.S. Army Corps of Engineers, 1100 Commerce Street, Dallas, Suite 831, Texas 75242-0216 within 60 days of the date of this notice. Failure to notify the USACE within 60 days of the date of this notice means you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

Thank you for your interest in our nation's water resources. If you have any questions concerning our regulatory program please refer to our website at http://www.swf.usace.army.mil/Missions/Regulatory or contact Ms. Katie Roeder at telephone (817) 886-1740 and refer to your assigned project number.

Please help the regulatory program improve its service by completing the survey on the following website: http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey

Sincerely,

Stephen L Brooks
Chief, Regulatory Division

Enclosures

Copies furnished (without enclosures):

Mr. Ryan Blankenship
Cox McLain Environmental Consulting, Inc.
600 E. John Carpenter Freeway Suite 186
Irving, Texas 75062

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Jay Britten	File Number: SWF-2019-00145	Date: 06-24-2019
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
x	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/appeals.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. 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.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

All Indicated Changes are in response to RAI WR-1

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Katie Roeder Regulatory Specialist, Evaluation Branch Regulatory Division U.S. Army Corps of Engineers Ft. Worth District 819 Taylor Street Fort Worth, Texas 76102-00300 Phone: 817-886-1740	Mr. Elliott Carman Administrative Appeals Review Officer (CESWD-PD-O) U.S. Army Corps of Engineers 1100 Commerce Street, Suite 831 Dallas , Texas 75242-1317 469-487-7061

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

All Indicated Changes are in response to RAI WR-1

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): April 11, 2019

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: SWF-2019-00145

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Texas County/parish/borough: Andrews City: N/A
Center coordinates of site (lat/long in degree decimal format): Lat. 32.44558° N, Long. -103.04298° W.
Universal Transverse Mercator:
Name of nearest waterbody: Monument Draw

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: None
Name of watershed or Hydrologic Unit Code (HUC): HUC 13070007

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: May 8, 2018
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: 0 linear feet: 0 width (ft) and/or 0.00 acres.
      Wetlands: 0.00 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known):

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: **A delineation of waters of the U.S., including wetlands, was conducted for the approximately 1,534-acre project area in February 2019. The proposed project area includes three classifications of aquatic features. A series of upland man-made drainage ditches, a series of non-wetland vegetated swales, and three playa lakes are located within the project area. None of the aquatic features within the project area are considered waters of the U.S. since all**

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

All Indicated Changes are in response to RAI WR-1

features are isolated and do not have a direct hydrologic connection to any other identified downstream water. The results of the wetland delineation indicate that no waters of the U.S., including wetlands, are located within the project area.

The upland man-made drainage ditches located within the project area would not be considered waters of the U.S. since they are located entirely within uplands and drain only uplands. These features are a result of excavation by WCS to facilitate operation of their facility.

The non-wetland vegetated swales observed within the project area would not be considered waters of the U.S. since they lacked an observable OHWM, clearly defined bed and banks, and wetland indictors, and do not appear to convey sufficient surface flows to create a hydrologic connection to other downstream aquatic features.

The three playas located within the project area (northern playa, eastern playa, and southern playa) are naturally occurring topographic features that collect local rainfall. They are closed depressions and do not have a clear surface hydrologic connection to any other identified aquatic feature.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: **N/A.**

   Summarize rationale supporting determination: N/A.

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": N/A.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: **Pick List**
   Drainage area: **Pick List**
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through **Pick List** tributaries before entering TNW.

   Project waters are **Pick List** river miles from TNW.
   Project waters are **Pick List** river miles from RPW.
   Project waters are **Pick List** aerial (straight) miles from TNW.
   Project waters are **Pick List** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: .
   Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is:
- ☐ Natural
- ☐ Artificial (man-made). Explain:
- ☐ Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):
- Average width: feet
- Average depth: feet
- Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
- ☐ Silts
- ☐ Sands
- ☐ Concrete
- ☐ Cobbles
- ☐ Gravel
- ☐ Muck
- ☐ Bedrock
- ☐ Vegetation. Type/% cover:
- ☐ Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:
Presence of run/riffle/pool complexes. Explain:
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime:
Other information on duration and volume:

Surface flow is: **Pick List.** Characteristics:

Subsurface flow: **Pick List**. Explain findings:
- ☐ Dye (or other) test performed:

Tributary has (check all that apply):
- ☐ Bed and banks
- ☐ OHWM[6] (check all indicators that apply):
  - ☐ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☐ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☐ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community
- ☐ Discontinuous OHWM.[7] Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
- ☐ High Tide Line indicated by:
  - ☐ oil or scum line along shore objects
  - ☐ fine shell or debris deposits (foreshore)
  - ☐ physical markings/characteristics
  - ☐ tidal gauges
  - ☐ other (list):
- ☐ Mean High Water Mark indicated by:
  - ☐ survey to available datum;
  - ☐ physical markings;
  - ☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain:
Identify specific pollutants, if known:

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- ☐ Riparian corridor. Characteristics (type, average width):
- ☐ Wetland fringe. Characteristics:
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings:
  - ☐ Fish/spawn areas. Explain findings:
  - ☐ Other environmentally-sensitive species. Explain findings:
  - ☐ Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain:

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain:

Surface flow is: **Pick List**

Characteristics:

Subsurface flow: **Pick List**. Explain findings:

- ☐ Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain:
  - ☐ Ecological connection. Explain:
  - ☐ Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- ☐ Riparian buffer. Characteristics (type, average width):
- ☐ Vegetation type/percent cover. Explain:
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings:
  - ☐ Fish/spawn areas. Explain findings:
  - ☐ Other environmentally-sensitive species. Explain findings:
  - ☐ Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   - ☐ Tributary waters: linear feet width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   - ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
   - ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   - ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   - ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   - ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination:

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

All Indicated Changes are in response to RAI WR-1

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  - Identify type(s) of waters: .
- ☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
- ☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
- ☒ Non-wetland waters (i.e., rivers, streams): **16,718** linear feet **N/A** width (ft).
- ☐ Lakes/ponds: acres.
- ☒ Other non-wetland waters: 7.7 acres. List type of aquatic resource: Playa.
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Aerial (NAIP, 2016).
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☐ U.S. Geological Survey Hydrologic Atlas: .
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:2,000 Eunice NE (1983).
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: NRCS (2018).
- ☒ National wetlands inventory map(s). Cite name: NWI (2018).
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): NAIP (2016).
  - or ☒ Other (Name & Date): Site Visit, February 5, 2019.
- ☒ Previous determination(s). File no. and date of response letter: SWF-2007-173. August 29, 2007.
- ☐ Applicable/supporting case law: .
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: The proposed project area includes three classifications of aquatic features. A series of upland man-made drainage ditches, a series of non-wetland vegetated swales, and three playa lakes are located within the project area. None of the aquatic features within the project area are considered waters of the U.S. since all features are isolated and do not have a direct hydrologic connection to any other identified downstream water.

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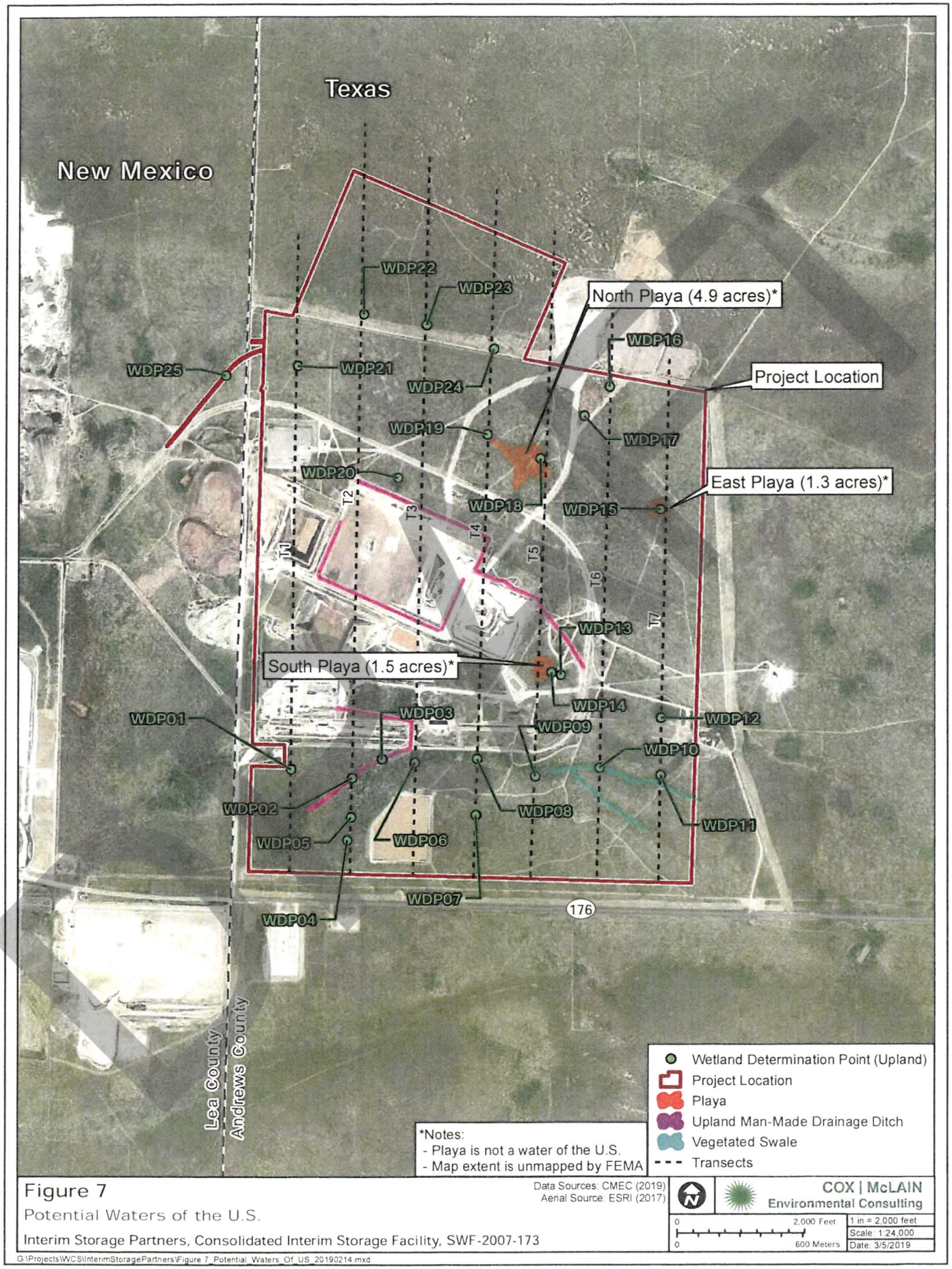

All Indicated Changes are in response to RAI WR-1

Table 1: Summary of Aquatic Features within the Project Area

Feature Number	Name of Water	Resource Type	Ordinary High Water Mark Width	Amount of Aquatic Resource (linear feet/acres)	Water of the U.S.? (Yes/No)
1	Upland Man-made Drainage Ditches	Upland Man-made Drainage Ditch	n/a	12,841 linear feet	No
2	Non-wetland Vegetated Swales	None-wetland Vegetated Swale	n/a	3,877 linear feet	No
3	Southern Playa	Playa	n/a	1.5 acres	No
4	Eastern Playa	Playa	n/a	1.3 acres	No
5	Northern Playa	Playa	n/a	4.9 acres	No
Total				16,718 linear feet/ 7.7 acres	

All Indicated Changes are in response to RAI WR-1

RAI WR-2

Describe in additional detail the potentially affected surface water environment at and near the proposed CISF, including:

- Seasonality of water in internally drained salt basins and surface depressions, including surface areas, seasonal water depths, shoreline lengths and monthly, quarterly, or other seasonal information about how much water the depressions contain throughout the year.
- Whether nearby industrial sites in New Mexico (i.e., Permian Basin Materials/Wallach Concrete Quarry, Sundance Services, LLC/Parabo Disposal Facility, Fish Pond), with artificial, standing surface water bodies, are harboring wetlands.
- Local surface water quality (i.e., surface water chemistry).

The additional information requested is needed to describe the surface water characteristics at and around the proposed CISF, and to evaluate potential impacts on surface water resources.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which requires that the ER include a description of the affected environment and an assessment of environmental impacts.

Response to RAI WR-2:

There are no surface water or wetland features on the CISF footprint. As discussed below, the adjacent Waste Control Specialists facility in Texas and the quarry and recycling facilities in New Mexico have localized wetland features such as playas and man-made excavations identified by the U.S. Fish and Wildlife Service (USFSW).

ER Figure 3.4-1 illustrates the USFSW classification of wetlands on the Waste Control Specialists facility and at neighboring facilities in New Mexico. The majority of the mapped features are classified as palustrine, seasonally or temporarily flooded over a few days to a few weeks. The palustrine classification system includes all nontidal wetlands dominated by trees, woody scrub shrubs, persistent emergent, and mosses or lichens. The palustrine features on the Waste Control Specialists facility are natural playas or localized impounded catchments. All of the palustrine features on the quarry of Permian Basin Materials/Wallach and commercial recycling facilities in New Mexico are classified as seasonally flooded man-made excavations.

Average annual precipitation is approximately 15.3 inches. Precipitation is typical of a semi-arid climate, with high intensity, short duration rainfall events generally during the months of July, August and September, when precipitation is generally highest (WCS CISF SAR Table 2-3). When precipitation rates exceed infiltration capacity, there is occasional ponding in the small, closed-drainage playas, which are typically a few acres or less in size. Ponded water depth in the playas is between a few inches and a few feet, with the water evaporating and infiltrating normally within a few days or weeks. The playas are typically dry throughout the year. A somewhat larger playa basin of about 30 acres occurs on the Waste Control Specialists property approximately 3.5 miles to the east of the CISF. Water depth in this larger playa basin, mapped as intermittent water by the United States Geological Survey (USGS) on the Jumbo Hill Quadrangle, is generally less than a few inches, and it is often dry throughout the year.

There is no permanent surface water feature on the Waste Control Specialists property. A sample of intermittently ponded surface water from the catchment at Baker Spring, west of the CISF in New Mexico, indicated a total dissolved solids content of 96 mg/L, pH of 7.46, total alkalinity (as $CaCO_3$) of 77.6 mg/L and biochemical oxygen demand of 3.7 mg/L (Reference [3]).

References:

1. U.S. Fish and Wildlife Service, National Wetlands Inventory, Wetlands Mapper, last modified May 5, 2019. https://www.fws.gov/wetlands/data/Mapper.html.

2. U.S.G.S. Jumbo Hill Quadrangle, "Topographic Map, Scale 1:24,000," 1971.

3. WCS (2007) (Waste Control Specialists LLC), Application for License to Authorize Near Surface Land Disposal of Low-Level Radioactive Waste, March 2007.

Impact:

ER Section 3.4.2 and Figure 3.4-1 have been revised as described in the response.

quarry (formerly Wallach Concrete) west of the CISF site and is also replenished by well water. In addition, Sundance Services, LLC operates the Parabo Disposal Facility for oil and gas waste west of the site. Water collects periodically in excavated and/or diked areas at this disposal facility and in the active quarry areas at this property adjacent to and west of the ISP joint venture member Waste Control Specialists property in New Mexico. *ER Figure 3.4-1 illustrates the USFSW classification of wetlands on the WCS facility and at neighboring facilities in New Mexico. The majority of the mapped features are classified as palustrine, seasonally or temporarily flooded over a few days to a few weeks. The palustrine classification system includes all nontidal wetlands dominated by trees, woody scrub shrubs, persistent emergent, and mosses or lichens. The palustrine features on the WCS facility are natural playas or localized impounded catchments. All of the palustrine features on the quarry of Permian Basin Materials and commercial recycling facilities in New Mexico are classified as seasonally flooded man-made excavations.*

Average annual precipitation is approximately 15.3 inches (SAR Table 2-3). Precipitation is typical of a semi-arid climate with high intensity, short duration rainfall events generally during the months of July, August, and September, when precipitation is generally highest (SAR Table 2-3). When precipitation rates exceed infiltration capacity there is occasional ponding in the small, closed-drainage playas, which are typically a few acres or less in size. Ponded water depth in the playas is between a few inches and a few feet, with the water evaporating and infiltrating normally within a few days or weeks. The playas are typically dry throughout the year. A somewhat larger playa basin of about 30 acres occurs on the WCS property approximately 3.5 miles to the east of the CISF. Water depth in this larger playa basin, mapped as intermittent water by the USGS on the Jumbo Hill Quadrangle, is generally less than a few inches, and it is often dry throughout the year (reference the USGS Quadranlge?).

There is no permanent surface water in the vicinity. A sample of intermittently ponded surface water from the catchment at Baker Spring, west of the CISF in New Mexico, indicated a total dissolved solids content of 96 mg/L, pH of 7.46, total alkalinity (as CaCO3) of 77.6 mg/L and biochemical oxygen demand of 3.7 mg/L (WCS, 2007).

The nearest surface water drainage feature to the CISF is Monument Draw in Lea County, New Mexico, a reasonably well-defined, southward-draining draw about 5 km (3 mi) west of the CISF. The draw does not have through-going drainage and loses surface expression after it enters Winkler County, Texas. (Note: there are two surface drainage features named Monument

All Indicated Changes are in response to RAI WR-2

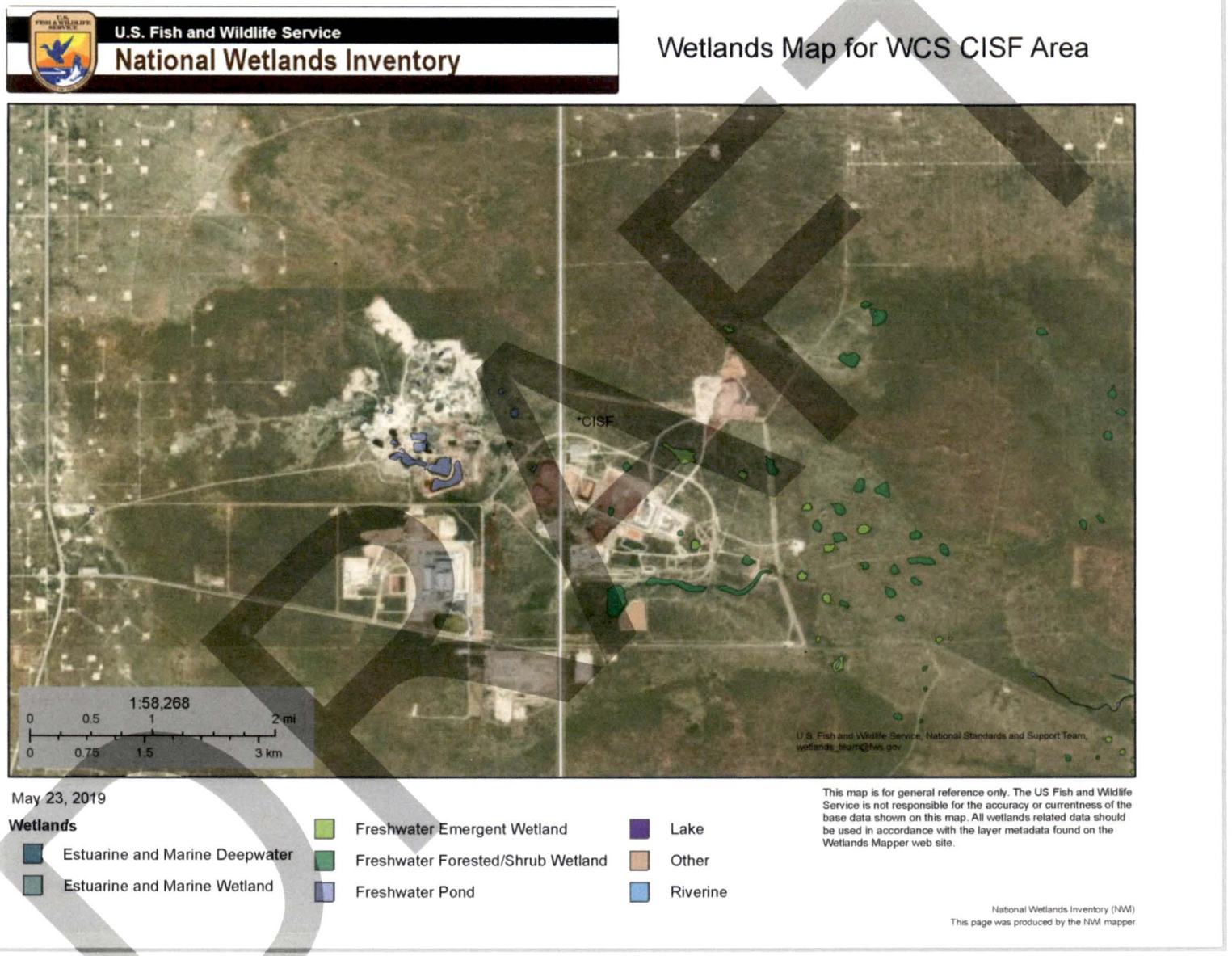

Figure 3.4-1 Wetlands

All Indicated Changes are in response to RAI WR-2

RAI WR-3

Clarify whether Baker Spring water chemistry data analyzed to date have a chemical fingerprint associated with Gatuña Formation/Pecos Valley Alluvium groundwater, with Antlers Formation groundwater, or with meteoric surface water. Clarify the nature of two groundwater springs located near the proposed CISF:

- Is Baker Spring a groundwater-sourced spring, or is its name a misnomer because it only contains rainwater runoff?
- Identify the groundwater source (i.e., the formal hydrogeologic unit/geologic formation) of an unnamed groundwater spring located 4.8 km [3 mi] east of ISP (see ER page 3-21) and identify the location of this spring relative to the proposed CISF on a map.

Baker Spring is described variously in literature as either a seasonally intermittent surface water feature sourced by rainfall (e.g., ISP's description at ER page 3-18) or as a Gatuña Formation groundwater-sourced spring (e.g., page 17 of Lehman and Rainwater, 2000). Updated surface water characterization information about Baker Spring and the other local spring are needed to describe the affected environment and to assess the potential environmental impacts to surface water and groundwater near the CISF.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which requires that the ER include a description of the affected environment and an assessment of environmental impacts.

Response to RAI WR-3:

Baker Spring is not an aquifer-sourced spring, hence the name is somewhat of a misnomer. It is an area where surface runoff is impounded in a shallow excavation into the red bed clays, a remnant of a former quarry at the base of a caprock erosional bench. Two relatively short surface water drainages from the northwest and northeast discharge off the bench to the Baker Spring area. Occasionally ponded surface water may infiltrate into the Gatuna gravels at the base of the former quarry, eventually being released back to the excavation as bank storage seepage or evaporation. Baker Spring is visually inspected monthly by Waste Control Specialists environmental technicians, as are all the playas in the Waste Control Specialists facilities area. Over the past five years, water at Baker Spring has been noted only four times (July 2014; May 2015; January 2016; and January 2017). The pond has been dry during 2018 and 2019.

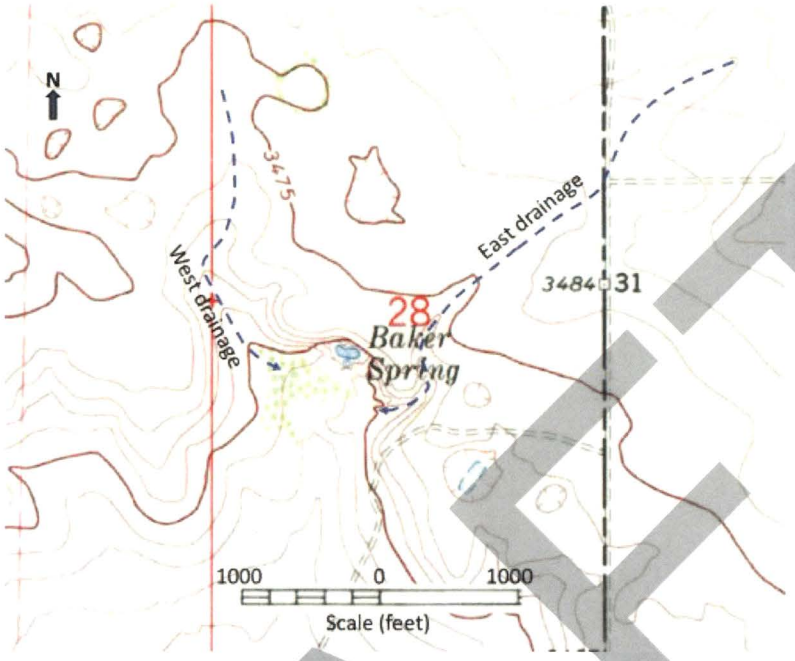

Figure WR-3-1
Surface Drainages to Baker Spring Area.

Although Lehman and Rainwater (2000, page 17 from Reference [4]) state that "water appears to discharge from the Gatuna Formation at Baker Spring," Dr. Lehman is quoted in the Low-Level Radioactive Waste (LLRW) Application (2007) as stating "I never observed water discharging from the gravels at Baker Spring" and further that it was an assumption that "water may have (or must have?) discharged there at some time (perhaps before the gravel pit was excavated)".

As presented in response to RAI WR-2, a sample of water from the pond at Baker Spring collected November, 2004 had a total dissolved solids content of 96 mg/L, pH of 7.46, total alkalinity (as $CaCO_3$) of 77.6 mg/L and biochemical oxygen demand of 3.7 mg/L (Reference [4], Attachment 6-4). Table WR-3-1 (Reference [4], Attachment 6-6) provides the analytical results of December, 2005 samples of ponded Baker Spring water and Ogallala/Antlers/Gatuña (OAG) groundwater (undifferentiated Ogallala, Antlers and Gatuna Formations) from a piezometer (TP-14) on the Waste Control Specialists site. TP-14 is located in a playa with occasionally ponded water about 1,000 ft east of the proposed CISF facility. Table WR-3-1 indicates the 2005 surface water samples at Baker Spring had about half the total dissolved solids (TDS) as the groundwater at TP-14 (which is infiltrated surface runoff) and the Baker Spring water was highly evaporated (isotopically much heavier) than the groundwater at TP-14. Darling (2006) in Reference [4], Attachment 6-6) states "The grab sample from Baker Spring is significantly more enriched than the OAG and Dockum samples. This point falls well below the global meteoric water line (GMWL), indicating that water at the discharge point of the spring is highly enriched by evaporation, compared with ground waters from the area." GMWL is the average relationship between the oxygen and deuterium stable isotopes ($\delta^{18}O$ and δD) in natural terrestrial waters. The C-14 ages of TP-14 water in Table WR-3-1 are modern: C-14 analysis was not done on Baker Spring water.

Table WR-3-1
Water Analyses of Baker Spring and TP-14 (from Reference [4]).

Sample ID	Units	Baker Spring	TP-14	TP-14
DATE		**12/24/2005**	**12/23/2005**	**1/23/2006**
Ca	mg//L	44	84	100
Mg	mg//L	12	17	ND
Na	mg//L	1.1	1.0	157
K	mg//L	ND	9.0	4
HCO3	mg//L	151	268	268
SO4	mg//L	11	17	14
Cl	mg//L	11	9	10
TDS	mg//L	241	398	509
Cond.	µmho/cm	228	451	454
pH	S.U.	7.74	7.36	7.15
Tritium	TU	4.32	6.13	6.01
^{14}C	PMC		94.8	98.84
$\delta^{2}H$	‰ SMOW	-15	-42	-42
$\delta^{18}O$	‰ SMOW	-1.2	-6.5	-6.5

The unnamed groundwater spring (Figure WR-3-2) located 4.8 km [3 mi] east of the proposed CISF, at latitude 32°26' and longitude 102°59', is identified on United States Geological Survey (USGS) topographic maps as Scratch Springs (USGS Jumbo Hill Quadrangle, 2019) and Kelly Windmill (USGS Jumbo Hill Quadrangle, 1971). An outcropping of indurated caliche occurs beneath the surface sand hills in the vicinity, suggesting the springs were groundwater discharging from the sand hills along the outcrop of the underlying caliche. Precipitation runoff and (previously) spring water discharge collects in a closed, salt-crusted depression about 1,500 ft southeast of the spring. Reference [1] states the springs were dry in 1923 when the then-current landowner arrived. A 10-meter deep well had been dug and two windmills at the site were pumping water into a tank. At a site visual inspection by Waste Control Specialists in 2005 the windmills and tank were in disrepair.

Figure WR-3-2
Location of Scratch Springs.

ER Section 3.4.2 has been updated to provide additional information related to Baker Spring. Section 9.0 has also been updated to include the new reference included in the Section 3.4.2 additional text.

References:

1. Brune, G., 1981, Springs of Texas: Branch-Smith, Inc., Forth Worth, TX, 566 p

2. United States Geological Survey, Jumbo Hill Quadrangle, 2019

3. United States Geological Survey, USGS Jumbo Hill Quadrangle, 1971

4. WCS (Waste Control Specialists LLC), "Application for License to Authorize Near Surface Land Disposal of Low-Level Radioactive Waste," March 2007.

Impact:

ER Sections 3.4.2 and 9.0 have been revised as described in the response.

Local topographic features outside the permitted area include Baker Spring to the west, small depressions or solution pans between Baker Spring and the permitted area, and a spring about 4.8 km (3 mi) to the east on the western side of the playa or salt lake basin discussed above, *which is identified on USGS topographic maps as Scratch Spring (USGS Jumbo Hill Quadrangle, 2019). Brune (1981) states the spring was dry in 1923 when the then-current landowner arrrived.*

Baker Spring is located in Lea County, New Mexico, about 0.58 km (0.36 mi) west of the Waste Control Specialists permitted area. Two minor unnamed surface draws empty into the Baker Spring depression. Baker Spring is *not an aquifer-sourced spring, hence the name is somewhat of a misnomer. It is an area where surface runoff is impounded in a shallow excavation in the red bed clays, a remnant of a former quarry at the base of a caprock erosional bench.*

In this part of west Texas, the Cenozoic Alluvium aquifer is considered a major aquifer and the Triassic Dockum Group aquifer is considered a minor aquifer (Mace, 2001).

3.4.3 Floods

The CISF would not be located in the 100-year floodplain. Attachment B of the SAR Chapter 2, presents the Flood Plain Study for the CISF and Figure II.F.4 in Appendix 2.4.1 in that report identifies the 100-year floodplain at the location of the proposed CISF. The 100-year floodplain extends across the southern portion of the Waste Control Specialists property area along the ranch house drainage. The northernmost limit of the 100-year floodplain is approximately 1,219 m (4,000 ft) southeast of the CISF site while the northernmost limits of the 500-year and PMP floodplains are 1,209 m and 1,187 m (3,965 ft and 3895 ft) southeast of the CISF site respectively.

3.4.4 Flood History

The climate of the area is classified as semiarid, characterized by dry summers and mild, dry winters. Annual precipitation on average is approximately 14 inches and annual evaporation exceeds annual precipitation by nearly five times. The area is subject to occasional winter storms, which produce snowfall events of short duration.

Rainfall records from July 2009 through December 2015, provided by Waste Control Specialists from a weather station near the CISF site, indicate an average annual rainfall of 12.6 inches and

U.S. Environmental Protection Agency (USEPA) Western Ecology Division, Ecoregion of New Mexico 2006, ftp://ftp.epa.gov/wed/ecoregions/nm/nm_front.pdf

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Waste Control Specialists, LLC, 2207b, Socioeconomic Impacts of the Waste Control Specialists Proposed Low-Level Radioactive Waste Disposal Facility, Andrews County, Texas, Dallas, Texas, March 16.

WCS. (2007). (Waste Control Specialists LLC). Application for License to Authorize Near Surface Land Disposal of Low-Level Radioactive Waste. Dated March 2007.

WCS. (2011). (Waste Control Specialists LLC). Low-Level Radioactive Waste Disposal Facility Pre-Operational Environmental Monitoring Report. Dated July 11, 2011.

WCS. (2013). (Waste Control Specialists LLC). Semi-Annual/Annual Radiological Environmental Monitoring Plan Report for January to December 2012. Andrews, TX: Dated March 28, 2013.

WCS. (2014). (Waste Control Specialists LLC). All Facilities Annual/Semi-Annual Radiological Environmental Monitoring Report, January 1-December 31, 2013. Andrews, TX: Dated March 28, 2014.

All Indicated Changes are in response to RAI WR-3

RAI WR-4

Clarify ER descriptions of site topography, water-balance parameters, surface water basins, and hydrogeologic characteristics at the proposed CISF by:

- Clarifying whether the statement on ER, page 3-19, that the proposed CISF is "located on a southwest-facing slope that transitions from the Southern High Plains to the Pecos Valley physiographic section" refers to the topographic slope upon which
- permitted WCS Low-Level Radioactive Waste (LLRW) facilities were constructed, or the location and natural slopes of the proposed CISF site, or to both (ER description appears vestigial from LLRW application-type documents, and therefore, possibly inaccurate relative to the proposed CISF site location).
- Clarifying whether or not the proposed CISF is located directly above a relatively flat-lying, local topographic high point above the Red Bed Ridge surface water/groundwater divide, whereas the existing WCS LLRW facility lies on a
- southwest-facing, lower elevation slope of the Red Bed Ridge, on the Rio Grande River Basin side of the surface water/groundwater divide. (ER description appears vestigial from LLRW application-type documents, and therefore, possibly inaccurate relative to the proposed CISF site location).
- Clarifying whether or not the proposed CISF is located entirely within the Rio Grande River Basin), which is separate from the adjacent Colorado River Basin, and whether or not the northwestern corner of the proposed CISF site is located at the river
- basin boundary.
- Providing a topographic map that illustrates the specific location of the surface water drainage divide between the Rio Grande and Colorado basins relative to the location of the proposed CISF at a scale that is commensurate with the scale of the
- ISP/WCS property.
- Clarifying site water-balance parameters; the ER states that infiltration and evapotranspiration would mitigate a significant amount of the potential runoff volume from the CISF site; quantify what is meant by the word "significant" and the other parameters of the site water-balance equation (i.e., evapotranspiration, runoff, storage, and infiltration/recharge).
- Clarifying planned usage of new or existing water-retention basins, if any, that would support CISF-construction, -operations, and -decommissioning activities.
- Clarifying planned or expected storm-water management facilities or activities.
- Clarifying whether or not local Gatuña Formation groundwater occurs within the Rio Grande River Basin (and not within the Colorado River Basin).
- Clarifying whether or not local Ogallala Formation groundwater occurs within the Colorado River Basin (and not within the Rio Grande River Basin).

Clarified topographic information, site water-balance information, descriptions of any planned usage of new or existing manmade surface water bodies, and hydrostratigraphic information for the units present immediately beneath the proposed CISF site is needed to assess

potential environmental impacts to surface water and near-surface groundwater at the proposed CISF.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which requires that the ER include a description of the affected environment and an assessment of environmental impacts.

Response to RAI WR-4:

The response to each bulleted item in the RAI is provided in the corresponding bulleted item below:

- The description of the topographic situation of the proposed CISF (ER Section 3.4.1) is correct. Both the permitted Waste Control Specialists Low-Level Radioactive Waste (LLRW) facilities and the proposed CISF are located on the southwest-facing slope that transitions from the Southern High Plains to the Pecos Valley physiographic section. The proposed CISF is upslope of the Waste Control Specialists LLRW facilities but still on the southwest slope draining to the Pecos Valley section. Most of the surface drainage from the CISF discharges to the large playa (679.3 acres) to the east. Should the playa overtop, drainage would be to the south from Analysis Point AP 3 (see SAR, Attachment B, Flood Plain Report).
- Although the buried Red Bed Ridge, a drainage divide throughout Cenozoic time, has been described as being "approximately coincident" with the current topographic high between the Colorado and Rio Grande River Basins, they are not co-located. The buried Red Bed Ridge is approximately 1,200 ft south-southwest of the current topographic high. The axis of the buried Red Bed Ridge occurs from approximately the northwest corner of the neighboring Waste Control Specialists byproduct landfill to the southeast corner of the Compact Facility and continues southeastward beyond the Waste Control Specialists landfills (see Response to RAI NP-2.6-2).
- The proposed CISF is located entirely within the Rio Grande Basin (Pecos Valley) (see new ER Figure 4.4-1).
- A detailed site-specific topographic map with 1-foot contour intervals based on an aerial survey flown May 29, 2014 is provided in new ER Figure 4.4-1. The map illustrates the proposed CISF and the specific location of the surface water drainage divide between the Rio Grande (Pecos Valley) and Colorado River Basins and confirms the proposed CISF location is entirely within the Rio Grande River Basin.
- Please see the CISF Drainage Evaluation and Floodplain Analysis in SAR Chapter 2 Attachment B regarding site drainage.
- There is no planned usage of new or existing water-retention basins to support CISF-construction, -operations or -decommissioning activities.
- There are no additional planned or expected storm-water management facilities or activities outside of what is presented in the application.
- In the area of the neighboring Waste Control Specialists Facilities and the proposed CISF, the Gatuna Formation occurs on the southwest facing slope of the buried Red Bed Ridge; therefore any groundwater in the Gatuna Formation occurs within the Rio Grande River Basin.

- In the area of the Waste Control Specialists Facilities and the proposed CISF, the Ogallala Formation occurs on the northeast facing slope of the buried Red Bed Ridge; therefore, any groundwater in the Ogallala Formation occurs within the Colorado River Basin.

ER Section 4.4 has been updated to reference new Figure 4.4-1.

Impact:

ER Section 4.4 has been revised and Figure 4.4-1 has been added as described in the response.

- TPDES General Permit for Construction Storm Water: Because construction of the CISF would involve the disturbance of no more than 40 ha (100 acres) of land, a TPDES Construction General Permit from the TCEQ and an oversight review by the EPA Region 6 is required. ISP would develop a SWPPP and file a NOI with the TCEQ in Austin, TX prior to the commencement of construction activities.

RAI WR-1

- Section 401 Certification: Under Section 401 of the federal Clean Water Act, states can review and approve, approve with conditions, or deny all federal permits or licenses that might result in a discharge to State waters, including wetlands. A 401 certification confirms compliance with the State water quality standards. Activities that require a 401 certification include Section 404 permits issued by the U. S. Army Corps of Engineers (USACE). The State of Texas has a cooperative agreement and joint application process with the USACE relating to 404 permits and 401 certifications. By letter dated *June 24, 2019*, the USACE notified ISP joint venture member Waste Control Specialists of its determination that there are no USACE jurisdictional waters at the Waste Control Specialists site *or the proposed CISF* and for this reason the project does not require a 404 permit. As a result, a Section 401 certification is not required.

RAI WR-4

Collection and discharge of storm water runoff would be directed to the natural drainage network. The overall site would be graded to match the existing natural drainage and to prevent standing water at the CISF. The storm water runoff would be directed away from the facility and toward *existing drainage patterns. A detailed site-specific topographic map with 1 ft contour intervals based on aerial survey flown May 29, 2014 is provided in Figure 4.4-1. The map illustrates the proposed CISF and the specific location of the surface water drainage divide between the Rio Grande (Pecos Valley) and Colorado River Basins and confirms the proposed CISF location is entirely within the Rio Grande River Basin. See the CISF Drainage Evaluation and Floodplain Analysis in SAR Chapter 2 Attachment B regarding runoff and drainage.*

Industrial construction at the CISF site would create a short-term risk with regard to a variety of operations and constituents used in construction activities. BMPs would assure storm water runoff related to construction activities would be detained prior to release to the surrounding land surface. BMPs would also be used for dust control associated with excavation and fill operations during construction. Impact from storm water runoff generated during plant operations is not expected to differ substantially from impacts currently experienced at the site. The water quality of the discharge from the site storm water would be typical of runoff from building roofs and paved areas from any industrial facility. Except for small amounts of oil and

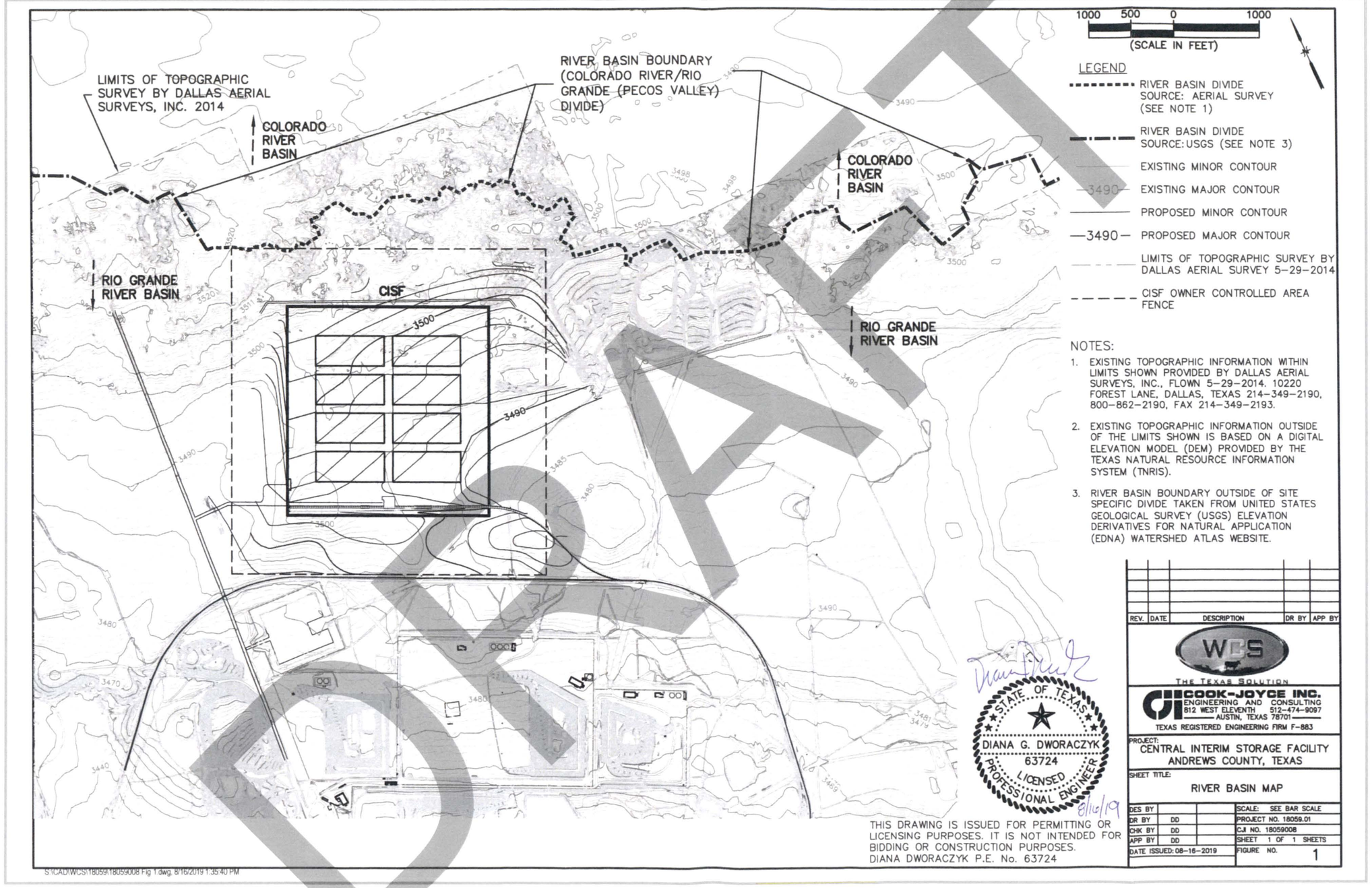

Figure 4.4-1, River Basis Map

All Indicated Changes are in response to RAI WR-4

RAI WR-5

Further, describe the groundwater environment underlying and near the proposed CISF by identifying:

- The groundwater source (i.e., the formal hydrogeologic unit) that supplies the nearest downgradient potable water well at the Letter B Ranch and the location of this well on a map relative to the proposed CISF.
- All windmill-pumped groundwater wells located on and within an 8-km [5-mi] radius of the ISP/WCS property that historically pumped near-surface groundwater. Illustrate the locations of these wells relative to the proposed CISF on a map, and interpret site information to identify on the map whether each well was screened in the Ogallala, Antlers, or Gatuña Formations.
- All active, industrial groundwater wells located on the ISP/WCS property that provide non-potable water for a firewater tank, processing activities, dust suppression, or any other industrial use; show all such ISP/WCS well locations on a map and provide well-perforation depths. Identify the aquifer formation(s) of the non-potable water pumped from these wells (give specific formation names, such as Trujillo or Santa Rosa Formations; "Dockum Aquifer" is not sufficiently specific). Provide, per hydrostratigraphic unit, the annualized volume of non-potable groundwater now in use for ongoing activities at WCS, estimate any anticipated future changes to the annualized volume of non-potable water that will be consumed for non-CISF activities, and estimate the additional annualized volume of non-potable water per aquifer that ISP would use exclusively in activities associated with construction and operation of the CISF during its various phases. Clearly identify which proposed CISF-related activities would require use of site industrial groundwater, and how CISF buildout phase would affect consumptive use.
- The number of boreholes/wells/piezometers drilled and completed beneath the proposed CISF footprint into the upper unit of the Dockum Aquifer, which may provide information about the occurrence and lateral continuity of saturated sand that occurs as lenses within the Cooper Canyon Formation/Red Bed Ridge clay unit. Provide hydrogeologic information available to ISP that would clarify the location of saturated sands beneath the proposed CISF potentially occurring within the Cooper Canyon Formation.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which require that the ER include a description of the affected environment and an assessment of environmental impacts, including cumulative impacts, and (b)(5), any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Response to RAI WR-5:

The potable groundwater well for the nearest house on the Letter B Ranch is located adjacent to the road north of Hwy 176, about 4,000 ft south of the house (Figure WR-5-1). The well has a slotted interval between 45 and 85 ft, logged as 'sandstown' (sic) from 35 to 62 ft, red clay from 62 to 73 ft, sand and gravel from 73 to 82 ft. and red clay from 82 to 85 ft. The most likely source of potable ground water in the well is the sands and gravels between 73 and 82 ft, interpreted herein as the Ogallala.

Figure WR-5-1
Potable Groundwater Well for the Nearest House on the Letter B Ranch

Windmills identified on United States Geological Survey (USGS) topographic maps are shown in Figure WR-5- 2 (USGS Hobbs, New Mexico, 1:250,000, USGS Jumbo Hill, Texas, 1:24,000; USGS Eunice, NE, Texas-New Mexico; USGS Brinson Ranch, Texas, 1:24,000; USGS Hobbs SE, Texas-New Mexico, 1:24,000). A current water well search conducted by Banks Environmental Data Inc. is included as Attachment WR 5-1, and a previous water well search conducted by Banks and Waste Control Specialists and submitted with the LLRW Application (Reference [6]) is included as Attachment WR 5-2. The water well search submitted with the LLRW application is the more comprehensive and to the extent the Waste Control Specialists well search can be correlated with the USGS-identified windmills, the interpretation is provided below in Table WR-5-1. It is assumed that shallow wells (less than 200 ft depth) are open to either the Ogallala, Antlers or Gatuña (also likely termed Cenozoic Pecos Alluvium in some areas) Formations. Deeper wells are likely open to sandstones in the Triassic Dockum Group. It may be speculated that shallow wells located in the Colorado River surface water drainage basin are potentially open to the Ogallala Formation, or possibly the Antlers/Ogallala undifferentiated, and that shallow wells located in the Rio Grande drainage basin are open to the Gatuña (Pecos Valley alluvium) Formation, or possibly the Antlers/Gatuna undifferentiated. The buried red bed ridge separates the groundwater systems of the Ogallala and Gatuña (Pecos Valley alluvium) Formations, however as discussed in RAI-WR-4, the drainage divide between the Colorado and Rio Grande basins is approximately coincident with the red bed ridge; however, they are not co-located, therefore, there is some uncertainty near the approximately coincident divides as to the groundwater system in which wells may be.

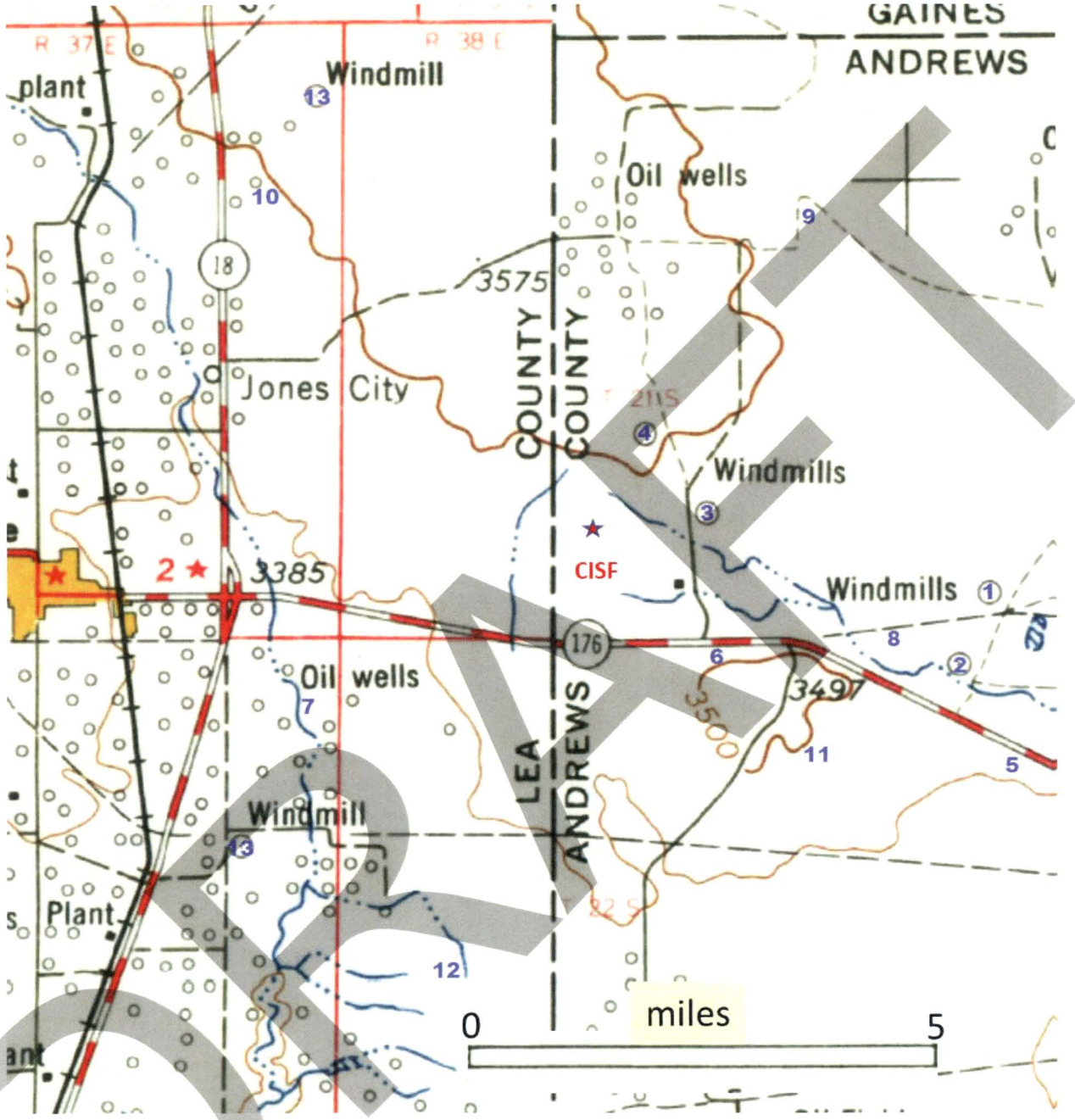

Figure WR-5-2
Windmills within 5 Miles of the Proposed CISF Identified on USGS Topographic Maps (1:24,000 & 1:250,000).

Table WR-5-1
Windmills within 5 Miles of the Proposed CISF Identified on USGS Topographic Maps

Well # on Figure	Well # in Attachment WR-5-2	Identifier	Depth (ft)	Formation: (see RAI response text for explanation and speculated completion formation)
1		Kelly Windmill	30	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
2	77	Ralph McWhorter	176	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
3	25	Ralph McWhorter	85	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
4	6		60	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
5				Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
6	13	Southeast well	80	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
7	51	George Sims	85	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
8	67	Ralph McWhorter	201	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
9	81,87	John Goen	136,138	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
10	66,73	Wm O Stephens	unknown	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
11	38	Ed Tinsley	unknown	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
12	68	George Sims	386	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)
13	88,94	Fullerton oil Co, Unknown	90,900 (?),90	Formation: Shallow wells are in either Antlers, Ogallala or Gatuña (Pecos Valley Alluvium)

The water for the existing potable water system at the current Waste Control Specialists facilities is supplied by Eunice, New Mexico via pipeline. This water supplies the water for all activities at the site including industrial activities such as the firewater tanks and processing. The proposed WCS CISF will tie in to the existing potable water system that serves the Waste Control Specialists facility and since this system is supplied with water from Eunice, there will be no impact to groundwater resources beneath the Waste Control Specialists property for the construction and operation of the CISF during its various lifecycle stages and development phases.

There are no borings into the sandstone/siltstone lenses of the upper units of the Dockum (Cooper Canyon Formation). The borings within the footprint of the CISF were terminated at the contact between the Dockum and the overlying undifferentiated Ogallala/Antlers.

References:

1. USGS Hobbs, New Mexico, 1:250,000
2. USGS Jumbo Hill, Texas, 1:24,000
3. USGS Eunice, NE, Texas-New Mexico
4. USGS Brinson Ranch, Texas, 1:24,000
5. USGS Hobbs SE, Texas-New Mexico, 1:24,000
6. Waste Control Specialists LLC, "Application for License to Authorize Near Surface Land Disposal of Low-Level Radioactive Waste," March 2007.

Impact:

No change as a result of this RAI.

RAI WR-6

Provide an ISP CISF site-specific hydrostratigraphic column to clarify the composition of the local hydrostratigraphic units underlying the proposed CISF site, which have a much simpler configuration than what is shown in the regional stratigraphic column of Safety Analysis Report (SAR) Figure 2-13.

The regional stratigraphic column illustrated in SAR Figure 2-13 is too complicated (it shows units that are not present at ISP-WCS) and does not clearly describe the local subsurface geologic situation at the CISF. More simplified and accurate visual information is needed to clearly describe and communicate the affected groundwater and vadose zone environments at the proposed CISF, and to facilitate assessments of the potential environmental impacts of CISF construction, operation, and decommissioning.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which require that the ER include a description of the affected environment and an assessment of environmental impacts.

Response to RAI WR-6:

A CISF site-specific geologic column with the presence or absence of groundwater is included as Figure 2-37 in the SAR, which was updated as part of the response to RAI P-2.6-1. The geologic column is reproduced in Figure WR-6-1 below, which describes the subsurface at the site including the formation name, composition or lithology, USCS designation as appropriate, age, and material properties. The CISF geologic column shows the Ogallala Formation unconformably overlying the Cooper Canyon Formation of the Dockum Group. The geologic investigations conducted by Waste Control Specialists throughout the LLRW area did not differentiate between the Ogallala/Antlers/Gatuna sands and gravels which are in the same hydrostratigraphic position overlying the Cooper Canyon. In an earlier investigation, Lehman and Rainwater (2000) (WCS, 2007), interpreted where these individual sand and gravel formations occurred, generally placing the Cretaceous Antlers over the crest of the red bed ridge, with the Ogallala Formation situated to the northeast and the Gatuna to the southwest. However, their interpretation was not based on sufficient boring data to distinguish the contacts between the Antlers and the Ogallala in the proposed CISF area, nor between the Antlers and the Gatuna on the south side of the ridge. The geologic column shows Ogallala overlying the Dockum, though it may also be considered as Antlers/Ogallala undifferentiated, as shown in the contour map (Figure WR-7-2) in response to RAI WR-7.

Years BP (millions)	ERA	PERIOD	FORMATION	THICKNESS	USCS	LITHOLOGY
0.01	CENOZOIC	QUATERNARY	COVER SANDS	1'-10'	SP	SAND, FINE GRAINED, WELL SORTED, **UNCONSOLIDATED**, LOOSE, ORANGE TO TAN, **DRY**
			CALICHE	4'-28'	NA	CALICHE WITH SAND MATRIX, **CONSOLIDATED**, FIRM TO MODERATELY HARD, WHITE TO TAN, **DRY**
			BLACKWATER DRAW	14'-38'	SP/SC/SM	SAND, W/SILT & CLAY, FINE GRAINED, WELL SORTED, **UNCONSOLIDATED**, ORANGE TO TAN, **DRY**
2.6		TERTIARY	CALICHE	19'-28'	NA	CALCAREOUS SAND, **CONSOLIDATED**-VERY HARD, LIGHT GRAY TO WHITE, **DRY**
			OGALLALA	35'-51'	SW/GW	SAND WITH GRAVEL GRADING DOWNWARD TO A GRAVEL WITH SAND, UPPER SAND IS WELL GRADE, **UNCONSOLIDATED**, TAN, **DRY**, LOWER GRAVEL WITH SAND MATRIX, POORLY SORTED, WELL TO POORLY CEMENTED, SUBANGULAR TO SUB ROUNDED, **DRY** IN THE SOUTHERN PORTION OF CISF SITE, 1-5 FEET OF GROUNDWATER PRESENT IN THE NORTHERN PORTION OF THE CISF SITE
66	MESOZOIC	CRETACEOUS	ERODED OR NOT DEPOSITED			
145		JURASSIC				
201		TRIASSIC	DOCKUM/ COOPER CANYON	~1400'/~500'	CL-CH	CLAY, CLAYSTONE, PLASTIC, STIFF, **CONSOLIDATED** MAROON TO RED, **DRY**

Note: Ogallala may also be considered Antlers/Ogallala undifferentiated, as the contact between the formations is not defined, nor was a distinction attempted in the Waste Control Specialists boring logs.

Figure WR-6-1
CISF Site-Specific Geologic Column

Impact:

No change as a result of this RAI.

RAI WR-7

Provide isopach maps for the tops of hydrogeologic units beneath the proposed CISF site, including isopach maps for the tops of all formally named formations and for the tops of water-bearing sand lenses occurring within the Cooper Canyon Formation.

Additional information about the depths to the tops of the local hydrogeologic units at the CISF site is needed to compare with potentiometric surface maps of hydraulic head and to accurately describe the affected groundwater and vadose zone environments at the proposed CISF to support the assessment of the potential environmental impacts of CISF construction and operation.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which require that the ER include a description of the affected environment and an assessment of environmental impacts.

Response to RAI WR-7:

Reference [1] includes information for numerous borings and piezometers in the proposed CISF area, with the primary objective of identifying the top of the Triassic Cooper Canyon mudstones. Based on these borings, structure maps for the tops of the Blackwater Draw and Antlers/Ogallala (undifferentiated) Formations are provided in Figures WR-7-1 and WR-7-2. The Quaternary Blackwater Draw (Figure WR-7-1) is situated immediately beneath the Recent cover sands, which are relatively thin in the proposed CISF area, generally less than about 2 ft. The Blackwater Draw silty sands have various stages of caliche development, whereas the cover sands are relatively loose with no discernable caliche. The top of the Blackwater Draw structure map in Figure WR-7-1 is based on the first occurrence of caliche in the Waste Control Specialists boring logs. The eighteen SAR Phase I/Admin/Transfer area geotechnical investigation boring logs (WCS CISF SAR Attachment E) in the southwest corner of the proposed CISF area are reasonably similar to the Waste Control Specialists logs (WCS CISF SAR Attachment C), showing loose- to medium-dense silty sand in the upper 2.5 to 6 ft, with caliche mentioned, but the contact between the loose cover sands and the first silty sand with caliche is not specifically identified. Therefore, the Geotechnical Borings in Attachment E of the WCS CISF SAR are not explicitly included in Figure WR-7-1. Their inclusion would result in only a few feet variation of the top of the Blackwater Draw.

The Blackwater Draw Formation is underlain by the caprock caliche, a hard, well-developed pedogenic calcrete developed on all pre-Quaternary formations in the southern High Plains. The boring rig used for the WCS CISF SAR geotechnical investigation could not penetrate the caprock. The WCS CISF SAR geotechnical borings terminated at either caprock refusal or 25 ft. The caprock at the proposed CISF is 20 to 30 ft thick.

The caprock is developed on the Cretaceous Antlers and Tertiary Ogallala Formations, which occupy the same hydrostratigraphic position, overlying the Dockum red beds. They are contiguous only in the hydrostratigraphic sense, not in time. Where the caprock caliche has not developed all the way to the Dockum red beds (mudstones, clays), there are undifferentiated Antlers and Ogallala sands and gravels between the caprock and Dockum Group mudstones. These formations (Antlers and Ogallala), along with the Gatuna in the same hydrostratigraphic position on the southern side of the red bed ridge, are locally termed by Waste Control Specialists as the undifferentiated "OAG Unit".

Section 3.4.14 was updated to clarify that the shallowest water bearing zone referenced at 225 ft deep is at the neighboring Waste Control Specialists facility.

Section 3.4.14.3 has been updated to state that there are no borings into the sandstone/siltstone lenses of the Cooper Canyon Formation within the CISF footprint on which structure contour maps can be based.

Relevant information regarding the hydrogeologic units at the site can also be found in RAI WR-8.

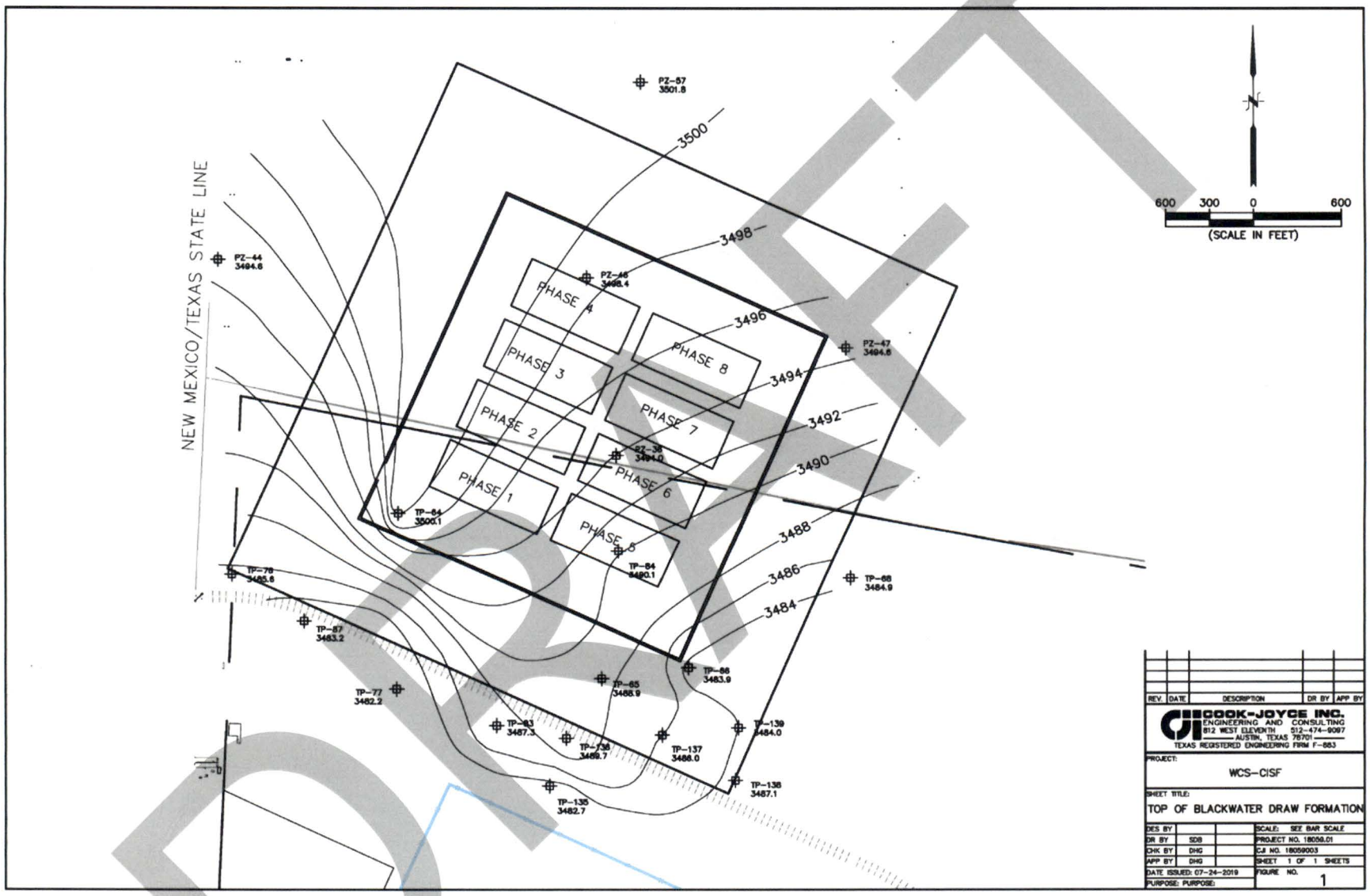

Figure WR-7-1
Top of Blackwater Draw Formation

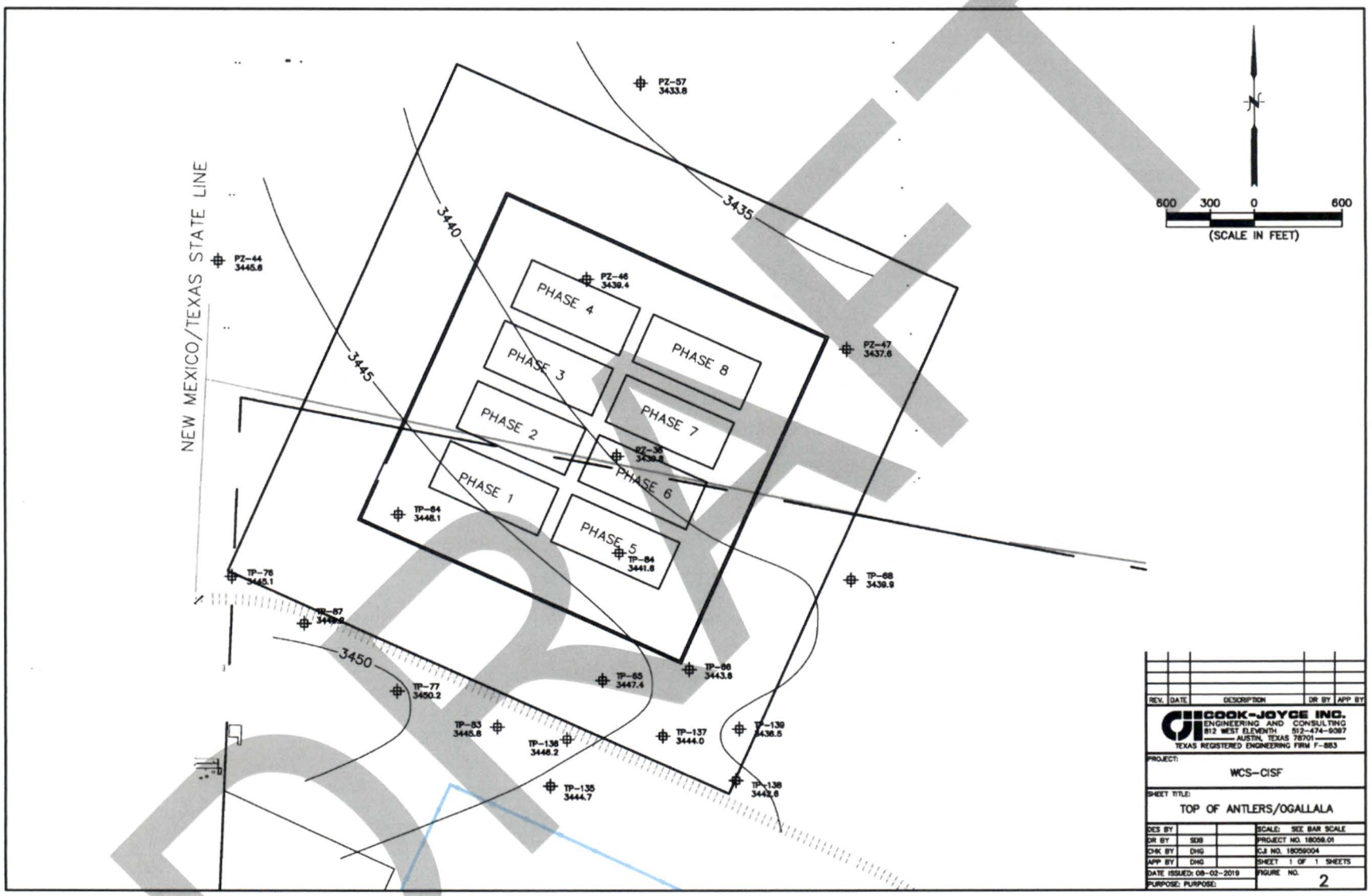

Figure WR-7-2
Top of Antlers/Ogallala

References:

1. Waste Control Specialists LLC, "Application for License to Authorize Near Surface Land Disposal of Low-Level Radioactive Waste," March 2007.

Impact:

ER Sections 3.4.14 and 3.4.14.3 have been revised as described in the response.

3.4.13 Environmental Acceptance of Effluents

There are no radioactive or other effluent releases associated with the proposed CISF facility. Stormwater runoff is not expected to contain any radiological effluents and facility stormwater runoff would be directed to the natural drainage system. Domestic wastes would be directed to above ground tanks on-site and the tanks would be periodically drained and all wastes would be transported offsite for disposal.

3.4.14 Subsurface Hydrology

The High Plains Aquifer of west Texas, the principal aquifer in west Texas, consists of water-bearing units within the Tertiary Ogallala Formation and underlying Cretaceous rocks (Nativ, R. and G.N. Gutierrez, 1988). In terms of hydrogeology, the High Plains aquifer is viewed as a single, hydraulically connected aquifer system, and groundwater exists under both unconfined and confined conditions. The term Ogallala aquifer is used interchangeably with the High Plains aquifer since, regionally, the Ogallala Formation is the primary component of the High Plains aquifer (Dutton, A.R., and W.W. Simpkins, 1986). Regionally the sands, gravels and sandstones that have been variously ascribed to the Tertiary Ogallalla Formations, the Tertiary aged sections of the Gatuña Formation, and the Cretaceous Antlers Formation are distinct and independent. Locally, these units are situated in the same stratigraphic interval and hydrogeologically they represent a single hydrostratigraphic unit overlying the Triassic red beds, the distinctive red and purple mudstones, siltstones, and sandstones of the Triassic Dockum Group. The hydrostratigraphic unit of undifferentiated sands and sandstones of the Ogallala/Antlers/Gatuña is locally referred to as the OAG unit. However, the Ogallala and Cretaceous aquifers are evaluated independently in the literature and would be addressed individually in the discussion below. In this part of west Texas, the Cenozoic Alluvium aquifer is considered a major aquifer and the Triassic Dockum Group aquifer is considered a minor aquifer; both will be addressed below (Mace, 2001).

The shallowest water bearing zone *at the neighboring Waste Control Specialist facility is located in a siltstone/sandstone lense at a depth of approximately 225 feet below ground surface.* Figure 3.4-2 is a groundwater contour map indicating the OAG unit is largely unsaturated beneath the WCS CISF. The nearest downgradient drinking water well identified in the hydrogeologic unit is located approximately 6.5 miles to the east of the proposed CISF at a residence on the Letter B Ranch. The method of storage (dry cask), the nature of the storage

3.4.14.3 Triassic Dockum Group Aquifer

There are no borings into the sandstone/siltstone lenses of the Dockum Group within the CISF footprint.

The Dockum Group regionally consists of Triassic fluvial and lacustrine clays, shales, siltstones, sandstones, and conglomerates. The Dockum Group consists of five formations, the lowermost of which is the Santa Rosa Formation, followed by the Tecovas, the Trujillo, the Cooper Canyon, and the Redonda Formations. Only the Santa Rosa, Tecovas, Trujillo, and Cooper Canyon Formations are present in the vicinity of the proposed CISF. Water from the Dockum Group aquifer is used as a replacement for, or in combination with, the Ogallala aquifer as a regional source for irrigation, stock, and municipal water (Dutton, A.R., and W.W. Simpkins, 1986). There are two water-bearing sandstone formations in the Dockum Group in the vicinity of the proposed CISF. Both yield non-potable water with less than 5,000 mg/L total dissolved solids. The Santa Rosa Formation sandstone at the base of the Dockum Group is about 76 m (250 ft) thick and is considered the best aquifer within the Dockum Group (Bradley, R.G., and S. Kalaswad, 2003). The top of the Santa Rosa Formation sandstone is at 347 m (1,140 ft) below ground surface at the proposed CISF.

The Trujillo Formation sandstone, the other Dockum Group water-bearing formation in the area, is about 30.5 m (100 ft) thick. The top of the Trujillo Formation is about 183 m (600 ft) below ground surface. Approximately 137 m (450 ft) of very low permeability Dockum Group fluvial and lacustrine clays separate the two formations. The lower Dockum Group aquifer is recharged by precipitation where Dockum Group sediments are exposed at land surface (Bradley, R.G., and S. Kalaswad, 2003). However, most of the recharge to the sandstones in the lower Dockum Group (comprising the Santa Rosa and Trujillo Formation sandstones) is considered to have occurred during the Pleistocene some 15,000 to 35,000 years before present (Dutton, 1995) (Dutton, A.R., and W.W. Simpkins, 1986). Topographically controlled groundwater basin divides were developed during the Pleistocene by the erosion of the Pecos and Canadian River valleys. Prior to the development of these groundwater basin divides, the lower Dockum aquifer was recharged by precipitation on its outcrop area in eastern New Mexico. However, since the development of the Pecos and Canadian River valleys, the lower Dockum aquifer in Texas has been cut-off from its recharge area. Without recharge, the lower Dockum aquifer experiences a net loss of groundwater from withdrawal by wells and by seepage (Dutton, A.R., and W.W. Simpkins, 1986). The regional hydraulic gradient of the lower Dockum aquifer is toward the

RAI WR-8

Provide geologic formation names instead of generic material labels on updates to SAR Figures 2-16 and 2-17 (i.e., geologic cross-sections). The affected groundwater environment must be clearly described.

The CISF is located at or near a surface water/groundwater basin divide, where three near-surface geologic units have discrete interfaces within relatively short distances (i.e., Ogallala Formation, Antlers Formation, and Gatuña Formation). For the adjacent LLRW site, Lehman and Rainwater (2000) clearly indicated what units lay beneath the proposed facility. In contrast, SAR Figures 2-16 and 2-17 only provide generic material type labels on the geologic cross-sections for the proposed CISF, and are, therefore, not explicit about which formations underlie the proposed facility. The proposed CISF would be located above regionally extensive, formally named geologic units having characteristics that are well-described in the literature. Additional information is needed about which hydrogeologic formations underlie the CISF site to accurately describe the affected groundwater and vadose zone environments at the proposed CISF and support assessment of the potential environmental impacts of CISF construction, operation, and decommissioning.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which require that the ER include a description of the affected environment and an assessment of environmental impacts.

Response to RAI WR-8:

SAR Figures 2-16 and 2-17 and ER Figures 3.3-2 and 3.3-3 have been updated to include the geologic units as opposed to the generic material labels and the location of any groundwater encountered. The geologic formation names correlate with the site-specific stratigraphic column found as Figure 2-37 in the SAR. All of the boreholes were dry when drilled with the exception of PZ-57 and PZ-47 and the monitoring wells installed in the boreholes are dry with the exception of PZ-57 and PZ-47, which are located north of the Protected Area for the proposed CISF. SAR Figures 2-16 and 2-17 have been updated to include the level of groundwater located in the monitoring wells PZ-57 and PZ-47. See RAI Response WR-5 for more information regarding the groundwater environment underlying the site.

The Lehman and Rainwater (2000) report, included in the 2007 Waste Control Specialists License Application for the neighboring Low-Level Radioactive Waste (LLRW) facility, mapped/interpreted the Antlers Formation beneath the proposed CISF; however, they did not have borehole control in the area of the CISF (Reference [1]). Subsequent geological subsurface investigations completed post-2000 included borings within and near the proposed CISF footprint (Reference [1]). These investigations indicate the sands and gravels beneath the proposed CISF are undifferentiated with respect to the Ogallala and Antlers Formations (Reference [1]). Geotechnically, these two formations are similar, with the primary difference being the gravel lithology (Reference [1]).

As discussed in Lehman and Rainwater (2000), it is difficult to discriminate the Antlers and Ogallala solely on the basis of well cuttings. The Ogallala and Antlers occupy the same stratigraphic position in this area and most likely interfinger, with the Cenozoic Ogallala deposited adjacent to and continuous with the remnant Cretaceous Antlers. The post 2000 boreholes on and near the proposed CISF footprint (Figure 2-15) log the stratigraphy above the Cooper Canyon as poorly cemented sandy gravel and various colored chert gravel. There is no distinction between the gravels based on the presence or abundance of igneous, metamorphic and sedimentary (limestone and sandstone) gravel clasts, suggested by Lehman and Rainwater as a potential means of distinguishing the formations. Various colored chert gravels are characteristic of both the Antlers and Ogallala Formations, as most of the gravel clasts in the Ogallala are derived from eroded Antlers sands and gravels. Two of the boreholes (TP-64 and TP-66) logged fossils in the unconsolidated sands and gravels, suggesting these deposits may be Ogallala, or interfingered Antlers and Ogallala.

References:

1. WCS (2007) (Waste Control Specialists LLC), "Application for License to Authorize Near Surface Land Disposal of Low-Level Radioactive Waste," March 2007.

Impact:

SAR Figures 2-16 and 2-17 have been revised as described in the response.

ER Figures 3.3-2 and 3.3-3 have been revised as described in the response.

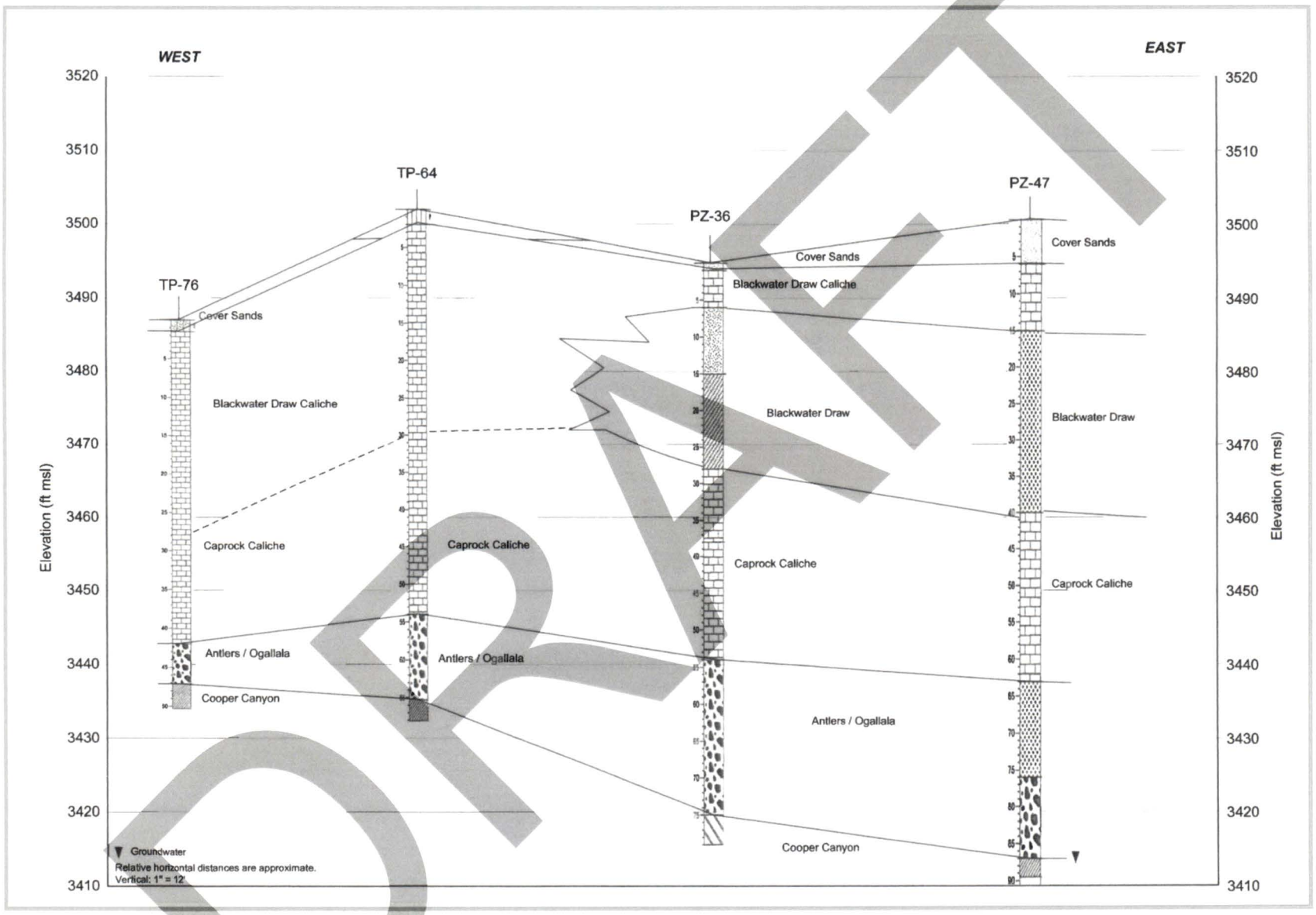

Figure 2-16
WCS CISF Cross Section West-East

All Indicated Changes are in response to RAI WR-8

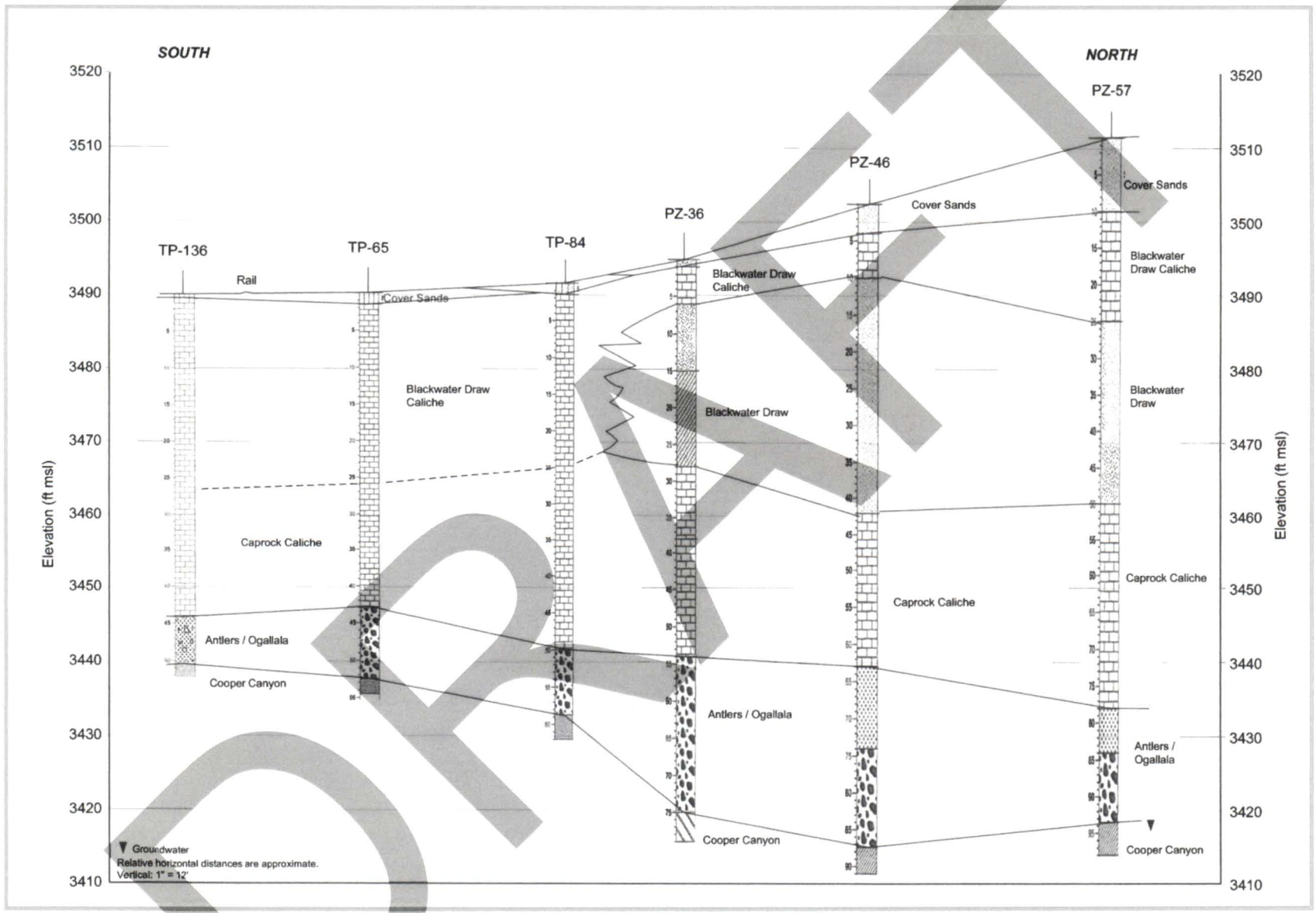

Figure 2-17
WCS CISF Cross Section South-North

All Indicated Changes are in response to RAI WR-8

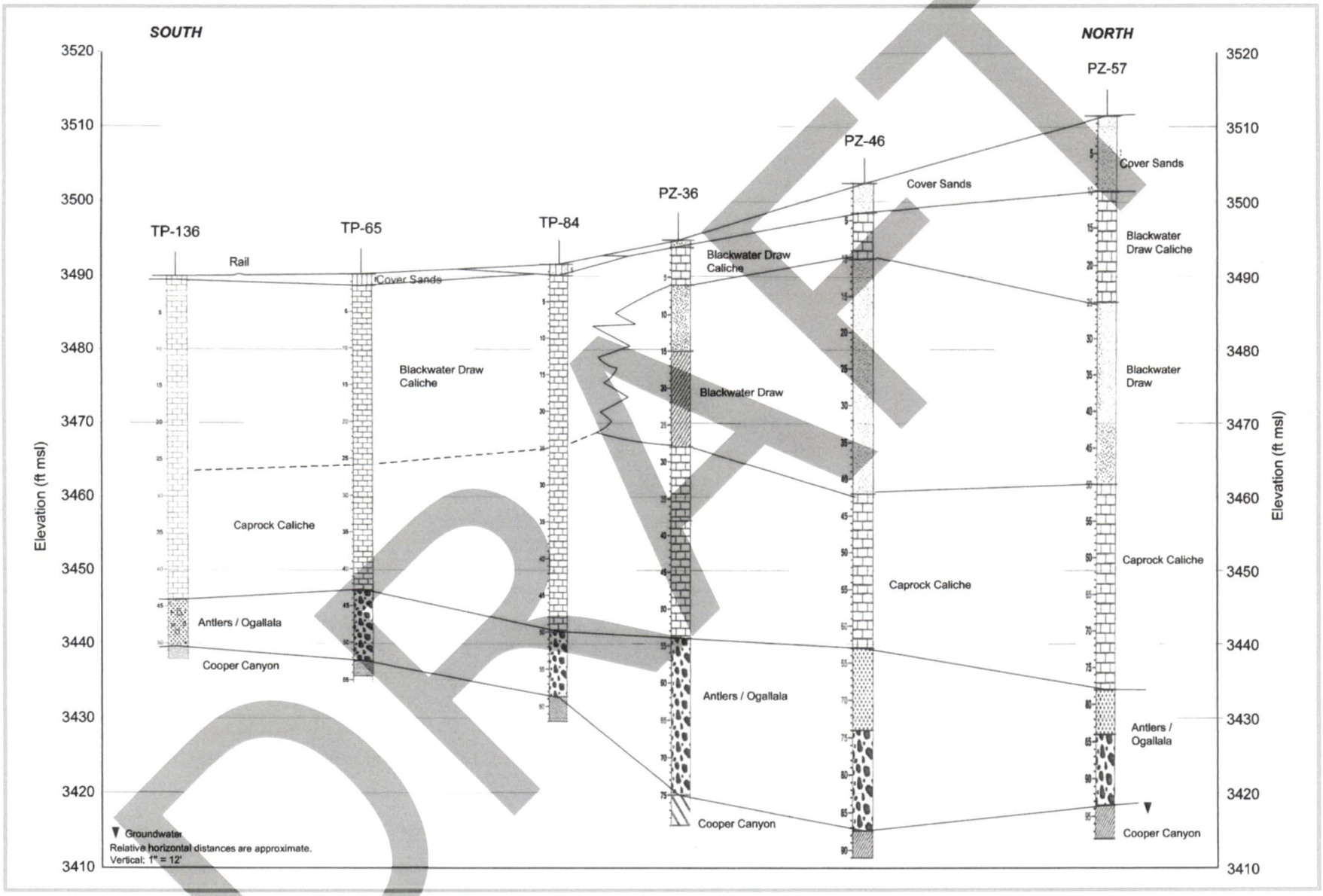

Figure 3.3-2 Cross Sections

All Indicated Changes are in response to RAI WR-8

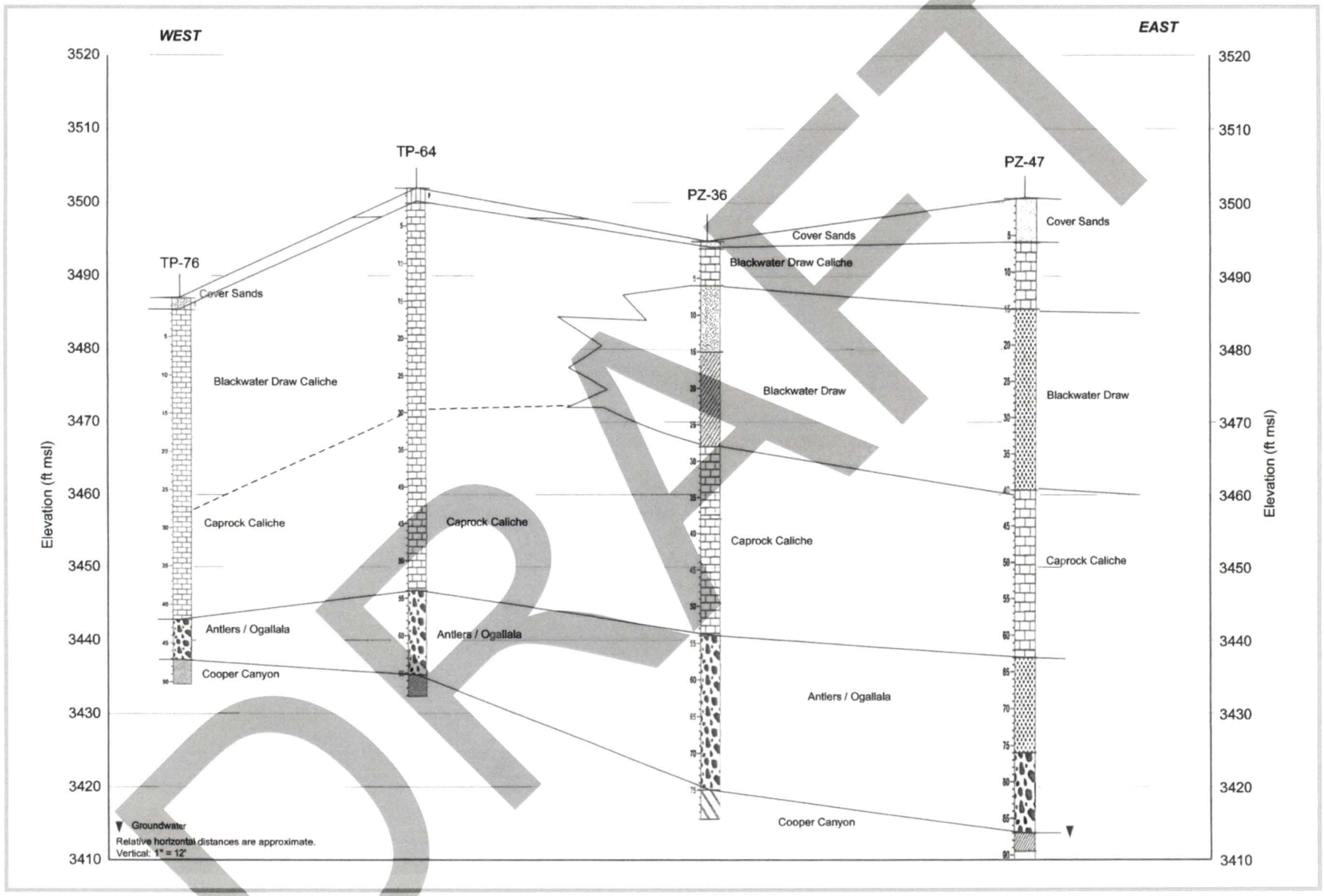

Figure 3.3-3 Cross Sections

All Indicated Changes are in response to RAI WR-8

RAI WR-9

Quantify the annualized volume of potable groundwater now in use for ongoing activities at WCS, estimate any anticipated future changes to the annualized volume of potable groundwater consumed for non-CISF activities, and estimate the additional annualized volume of potable groundwater that ISP will use exclusively to construct and operate the CISF during its various lifecycle stages and development phases.

ER Section 4.4 states that during construction and operation of the proposed CISF, potable water will be supplied by the existing potable water system that serves the WCS facility. Additional information is needed to support assessment of the environmental impacts that ISP's CISF potable groundwater consumptive use will have on groundwater resources and cumulative impacts.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which require that the ER include descriptions of the proposed action, the affected environment, and the impacts of the proposed action, including cumulative impacts.

Response to RAI WR-9:

The water for the existing potable water system at the current Waste Control Specialists facilities is supplied by Eunice, New Mexico via pipeline. The proposed WCS CISF will tie into the existing potable water system that serves the Waste Control Specialists facility and since this system is supplied with water from Eunice, there will be no impact to groundwater resources beneath the Waste Control Specialists property for the construction and operation of the CISF during its various lifecycle stages and development phases. ER Section 4.4 has been updated to clarify the above.

Impact:

ER Section 4.4 has been revised as described in the response.

grease typically found in runoff from paved roadways and parking areas, the discharge is not expected to contain contaminants.

Other potential sources for runoff contamination during plant operation include the cask storage pad containing SNF and associated components. This pad is a potential source of low-level radioactivity that could enter runoff, though such an occurrence is highly unlikely. The storage system design and construction, along with environmental monitoring of the storage pad, combine to make the potential for contaminant release through this system extremely low. An initial analysis of maximum potential levels of radioactivity in rainwater runoff due to surface contamination of the dry casks shows that any potential levels of radioactivity in discharges would be well below (two orders of magnitude or more) the effluent discharge limits of 10 CFR Part 20, Appendix B.

During construction and operation of the proposed WCS CISF, potable water will be supplied by *the* existing potable water system at ISP joint venture member Waste Control Specialists. *The Waste Control Specialists potable water system is supplied with water by Eunice, New Mexico via pipeline. Construction and operation of the proposed WCS CISF will not use potable groundwater resources from the Waste Control Specialists property and will not have any impact on groundwater resources at the Waste Control Specialists property, since the potable water is supplied by Eunice, NM.* There *is no permanent* surface water in the vicinity of the proposed CISF. The closest surface water conveyance is *Monument* Draw, New Mexico*, which is* located approximately 3 miles from the proposed WCS CISF. No adverse impacts to *groundwater or* surface water are anticipated during construction and operation of the proposed WCS CISF.

The proposed WCS CISF is not located in the 100 year floodplain (SAR Attachment B). There are no maps of special flood hazard areas for the location published by the Federal Emergency Management Agency (FEMA).

The CISF would be designed and constructed in manner that would minimize the quantity of radioactive wastes and contaminated equipment, and facilitate the removal of radioactive wastes and contaminated materials at the time the CISF is permanently decommissioned pursuant to 10 CFR 72.130, *Criteria for decommissioning*. At the time of license termination, the site would be released for unrestricted use in accordance with 10 CFR 20, Subpart E. Therefore, the cumulative impact to water resources would be small.

RAI WR-10

Provide groundwater unit information that corresponds with the water quality data provided in the application to support the ER. ISP should clearly identify the names of the individual hydrogeologic formations that are associated with the groundwater quality described in ER Sections 3.4.14.1 and 3.4.14.5.

ER Sections 3.4.14.1 and 3.4.14.5 use terminology [e.g., 55 m and 69 m (180 ft and 225 ft) zones] that is not defined in the ER. Additional information about which geochemical data are associated with the sampled groundwater formations (e.g., Gatuña, Antlers, Ogallala, Cooper Canyon, Santa Rosa, and or Trujillo) is needed to support assessment of the potential environmental impacts to groundwater quality at or near the proposed CISF. Please provide a map that spatially indicates where geochemical samples were acquired from wells/boreholes, relative to the footprint of the proposed CISF.

This additional information is needed in accordance with 10 CFR 51.45(b), which requires that the ER include a description of the affected environment.

Response to RAI WR-10:

The groundwater geochemical samples discussed in Section 3.4.14.1 were presented in the Waste Control Specialists LLRW License Application (Reference [1]), Section 6.2.7. The results for the shallow wells discussed in Section 6.2.7 are provided in Table WR-10-1. The samples were obtained from the hydrostratigraphic unit at the current Waste Control Specialists site termed the Ogallala/Antlers/Gatuña (OAG), comprising undifferentiated Ogallala/Antlers/Gatuna Formation sediments. These wells correspond to the hydrogeologic formations identified in Table WR-10-1, below: the undifferentiated Antlers/Ogallala (well 26-40-201), or the undifferentiated Antlers/Ogallala/Gatuña (well 26-40-601, and well 26-40-602). The approximate location of these wells relative to the proposed CISF is shown on Figure WR-10-1.

Table WR-10-1
Groundwater Geochemical Samples for Shallow Wells at the Waste Control Specialists Site (Reference [1])

	Well No. 26-40-201		Well No. 26-40-601		Well No. 26-40-602
Aquifer	Antlers/Ogallala undifferentiated		Antlers/Ogallala/Gatuna undifferentiated		Antlers/Ogallala undiffferentiated
Well Depth (feet)	Unknown		Unknown		80
Sample Date	10/09/80	05/22/96	10/09/80	08/01/74	10/10/90
Calcium (mg/L)	206	NR	62	60	78
Magnesium (mg/L)	17	NR	8	11	21
Sodium (mg/L)	92	NR	20	20	36
Bicarbonate (mg/L)	205	166	233	231	249
Sulfate (mg/L)	196	150	19	15	39
Chloride (mg/L)	265	317.5	8	9	39
Nitrate (mg/L)	65.5	NR	23.2	24	4.07
Fluoride (mg/L)	0.4	0.51	0.8	1	0.76
Silica (mg/L)	53	34.3	44	39	43
TDS (mg/L)	1070	NR	308	293	429
Cond (mmhos/cm^3)	1250	1109	415	437	459
pH	8.1	8.15	8.0	8.0	7.14

mg/L = miligrams per liter
mmhos/cm = micromhos per cubic centimeter
NR: Not Reported

Note: Geochemical results are presented in Table WR-10-1

Figure WR-10-1
Location of Shallow Groundwater Wells Sampled

The groundwater geochemical samples discussed in Section 3.4.15.5 are from the 225-foot zone, a saturated, fine-grained sandstone in the Cooper Canyon Formation of the Triassic Dockum Group at a depth of about 225 ft below ground surface at the Waste Control Specialists site. The 225-ft zone, the first continuous saturated sandstone in the Cooper Canyon Formation, is under confined conditions with a hydraulic conductivity of approximately 4E-08 cm/s. The '225' is defined for regulatory monitoring purposes at the neighboring Waste Control Specialists facility as the "uppermost aquifer", despite a hydraulic conductivity less than a Resource Conservation and Recovery Act (RCRA) landfill clay liner. The groundwater geochemical results are provided in Table WR-10-2 and the locations of these 225-ft zone wells sampled relative to the proposed CISF are shown in Figure WR-10-2.

Table WR-10-2
Groundwater Geochemical Samples for Wells in the 225-ft zone of the Cooper Canyon Formation at the Waste Control Specialists Site (Reference [1])

Well Number	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	Cl (mg/L)	SO_4 (mg/L)	HCO_3 (mg/L)	Total Dissolved Solids (mg/L)[3]	Ion Balance*
225 foot zone								
DW-35A[1]	170	54	1200	1000	1800	150	4600	0.95569
DW-35B[1]	160	51	1300	980	1700	150	4700	1.049329
MW-1A[1]	150	46	1100	520	2100	120	4600	0.979472
MW-1B[1]	170	49	1100	570	2300	110	4600	0.91782
DW-33A[1]	120	41	970	490	1700	180	3800	0.988279
DW-33B[1]	NM	NM	NM	490	1700	170	3800	NC
MW-3A[1]	140	43	1100	470	2000	140	4100	1.02063
MW-3B[1]	130	37	1100	480	2000	110	4100	1.006966

* Ion balance calculated as (Ca + Mg + Na) / (Cl + CO_4 + HCO_3): units of meq

[1] Sampled 4/20/2004

[2] Sampled June 2001

[3] Total Dissolved solids calculated as electrical conductivity (uSiemens/cm) X 0.6: (Chem Nuclear Systems, 2001)

NM: not measured

NC: not calculated

Note: Geochemical results are presented in Table WR-10-2

Figure WR-10-2
Location of 225-ft Zone Groundwater Wells Sampled
(Geochemical results are presented in Table 2)

References:

1. Waste Control Specialists LLC, "Application for License to Authorize Near Surface Land Disposal of Low-Level Radioactive Waste," March 2007.

Impact:

No change as a result of this RAI.

RAI WR-11

Identify the shallowest groundwater located beneath the proposed CISF footprint by name and depth below the CISF land surface, whether in the Antlers, Ogallala, Gatuña, or Cooper Canyon Formation. In future documentation associated with the proposed action, name the specific aquifers in the Dockum Group that are discussed, whether the Cooper Canyon, Trujillo, or Santa Rosa Formations. In response to this RAI, use of the lumped term "Dockum Aquifer" should be avoided because it applies to the entire thick sequence of the Dockum Group (to both aquifers and aquitards) and does not clearly denote the site-specific aquifer that is being referenced at the proposed CISF. ISP's license application should also call out by name the near-surface groundwater formations (Antlers, Ogallala, or Gatuña) that are referred to in any related text or that are associated with any data provided.

In response to RSI 9.6, the applicant indicated, "The…nearest aquifer is located at a depth of 245 to 305 m [800 to 1,000 ft] below ground surface." The response to RSI 9.6 does not indicate by name a hydrogeologic formation associated with this aquifer. The applicant should clarify if they are referring to a water-bearing sandy zone within the Cooper Canyon Formation or to another aquifer deeper in the Dockum Group. Also in response to RSI 9.6, the applicant indicated that "(t)he WCS site is separated from that [unspecified nearest] aquifer by the Dockum Formation, consisting of low permeability clays (10−9 cm/s)." The applicant should clarify whether it meant, "separated from that aquifer by the Cooper Canyon Formation," given that the Dockum Group contains two aquifers at the ISP/WCS property located below the Cooper Canyon Formation, as well as additional water-bearing sandy zones within the otherwise clayey Cooper Canyon Formation.

This additional information is needed in accordance with 10 CFR 51.45(b) and (b)(1), which require that the ER include a description of the affected environment and an assessment of environmental impacts.

Response to RAI WR-11:

The shallowest groundwater beneath the proposed CISF footprint is a few inches to a few feet of saturation in the undifferentiated Antlers/Ogallala sediments starting at the northern fence line of the Protected Area boundary in the northeast corner. The sands and gravels containing the water at a 90- to 100-foot depth are part of the hydrostratigraphic unit termed the Antlers/Ogallala/Gatuña (OAG) by ISP joint venture member Waste Control Specialists. The OAG comprises laterally contiguous sands and gravels of the Tertiary Ogallala, Cretaceous Antlers and Cenozoic Gatuña Formations and at the Waste Control Specialists facility this unit is discontinuous and largely dry or unsaturated beneath the Waste Control Specialists facilities.

The shallowest water bearing zone at the neighboring Waste Control Specialists facility is located in a siltstone/sandstone lense at a depth of approximately 225 feet below ground surface. There are no borings into the sandstone/siltstone lenses of the Cooper Canyon Formation within the CISF footprint. There is no cross-formational flow between the hydrostratigraphic units.

The "aquifer" referenced in RSI 9.6 referred to the Trujillo aquifer located in the Trujillo sandstone, which is part of the Dockum Group. The Trujillo is located within the Dockum Group, which is overlain by the Cooper Canyon Formation (WCS CISF SAR Figure 2-13). The Trujillo Aquifer is confined by the overlying Cooper Canyon Formation, which consists of low permeability clays (10-9cm/s).

Impact:

No change as a result of this RAI.

ECOLOGY (ECO)

RAI ECO-1

Provide updated ecological studies for the proposed CISF and associated rail siding in Texas and New Mexico, if available, and provide an estimated timeframe when the updated ecological studies will be available. Provide written documentation in response to Texas Commission on Environmental Quality (TCEQ) license conditions.

Ecological studies at the WCS site were conducted during 1996, 1997, 2004, and 2006. Some of these surveys covered the entire proposed CISF area while others covered only a portion of the proposed CISF area; however, due to the age of these surveys and the natural changes of plants and animals over time, the presence or absence of State and Federal species of concern, including threatened and endangered species, should be confirmed. The NRC staff understands that it takes more than one growing and breeding season to conduct baseline ecological surveys.

The NRC staff's review of WCS's Radioactive Material License R04100, Amendment No. 31 (October 2017) suggests that updated written documentation from the U.S. Fish and Wild Service (USFWS) and the Texas Parks & Wildfire Department (TPWD) may be available as a result of License Condition #160, which states "The Licensee must provide to the executive director every five (5) years written documentation from the Texas Parks and Wildlife Department and the United States Fish and Wildlife Service regarding the presence of threatened or endangered species occurring near the site." In addition, License Condition #161 noted in WCS's Radioactive Material License Amendment No. 12 from 2012 stated, "The Licensee must recognize Baker Spring as a perennial water body and conduct appropriate aquatic surveys to establish baseline conditions and to identify the supported species, including aquatic and benthic invertebrates." Specifically, the additional information requested regarding ecological studies conducted after 2006 and baseline ecological studies and surveys previously conducted for Baker Spring is needed to describe the most recently observed ecological characteristics at and around the proposed CISF, and to evaluate potential impacts on ecological resources, including sensitive species.

This additional information is needed in accordance with 10 CFR 51.45(b)(1) and (2), which require that the ER discuss the impacts and adverse effects of the proposed action, and the Endangered Species Act.

Response to RAI ECO-1:

An ecological study for the entire footprint of the proposed CISF has been completed over the period of 2018 and 2019 to provide an updated assessment for the entire area of the proposed CISF, and has been included in new Attachment 3-6.

Pursuant to Radioactive Material License No. R04100; License Condition 160, the neighboring Waste Control Specialists facility to the proposed CISF, provides to the Texas Commission on Environmental Quality (TCEQ) a report every five years regarding the presence of threatened or endangered species occurring near the site. This report was last submitted on July 11, 2014 and is included as Attachment ECO-1-1 to this RAI response.

Pursuant to previous amendments of the Radioactive Material License No. R04100 License Condition 161 was removed in 2013 with the approval of Amendment 23 by the TCEQ. The basis for removal was that Waste Control Specialists had conclusively demonstrated that Baker Spring is not a perennial water body. Further information regarding Baker Spring can be found in RAI Response WR-3.

Impact:

ER Section 3.5 has been revised and Attachment 3-6 has been added as described in the response.

for the 69 m (225 ft) zone groundwater, as well as distinct separation of the shallower OAG unit from the 69 m (225 ft) zone. If groundwater from the shallow, unconfined OAG unit were readily reaching the 69 m (225 ft) zone, then it would be expected that the general water chemistry between the two zones would be similar. (TCEQ, 2015a).

3.5 ECOLOGICAL RESOURCES

This section describes the terrestrial and aquatic communities of the proposed CISF. This section is intended to provide a baseline characterization of the ecology at the CISF prior to any disturbances associated with construction or operation of the CISF. The impacts on ecology at the CISF from prior environmental disturbances (e.g., roads and existing radiological facilities) not associated with the proposed CISF are considered when describing the baseline condition. The plant and animal species associated with this major community are identified and their distributions are discussed. Those species that are considered important to the ecology at the CISF are described in detail. To the extent possible, these descriptions include discussions of the species' habitat requirements, life history, and population dynamics. Also, as part of the evaluation of important species at the CISF, pre-existing environmental conditions that may have impacted the ecological integrity of the CISF and affected important species are considered. Unless otherwise indicated, the information provided in this section is based on surveys conducted by ISP joint venture member Waste Control Specialists.

3.5.1 Prior Ecological Studies at the CISF

A complete ecological assessment of the proposed CISF area and adjoining areas was initially conducted in 1996-97 in conjunction with the proposed development of a LLRW processing and storage facility. That assessment was updated in 2003-04 and supplemented in 2006-07 to support further development of Waste Control Specialists existing treatment and radioactive waste disposal facilities to include additional facilities related to disposal of LLRW and uranium byproduct material. *Cox-Mclain Environmental Consulting completed the "Interim Storage Partners (ISP), Waste Control Specialists (WCS): Ecological Resources Report" in 2018 and 2019 and this report can be found in Attachment 3-6 of the ER.*

3.5.2 General Ecological Conditions of the CISF

Natural habitats in the study area, defined as the area within a 5 km (3.1 mi) radius of the proposed CISF, are mostly shrub land with grassy patches, which are typical of the larger

surrounding region. Species observed in these areas are also typical of the region. Two species of concern, the Texas horned lizard (*Phyrnosoma cornutum*) and *dunes sagebrush lizard* (*Sceloporus arenicolus)*, occur within the area. The former is widespread in Texas and is considered threatened because of over-collecting, incidental loss, and habitat disturbance. The latter has a specialized habitat that occurs throughout much of the region of the proposed CISF. It is a *Species of Greatest Conservation Need* due to the loss of habitat, primarily due to spraying to remove shinnery oak (*Quercus havardii)* to improve grazing.

3.5.3 Description of Important Plant and Wildlife Species

3.5.3.1 Vegetation

The survey area is located within the Havard Shin-Oak-Mesquite Brush Vegetation Type of Texas (TPWD 2003). During field investigations, three distinct vegetation types were observed within the survey area. Identification of the vegetation types was based on species composition, canopy cover, and morphology. The Mesquite Thorn-Scrub observed vegetation type is mostly located within the central and southern extents of the survey area.). Approximately 230.5 acres of this vegetation type would be impacted by the proposed project.

This vegetation type provides potentially suitable habitat for an array of migratory bird species as well as the state-listed Texas horned lizard. Animal species observed within this vegetation type during the October 2018 and/or April 2019 site visits included, but are not limited to: black-tailed jackrabbit, eastern cottontail, mule deer, javelina, robber fly, red harvester ant (and mounds), six-lined racerunner, and various bird species and inactive nests. The Havard Oak Dunes observed vegetation type is mostly located within the northern extent of the survey area. Approximately 76.0 acres of this vegetation type would be impacted by the proposed project. This vegetation type provides potentially suitable habitat for an array of migratory bird species, dunes sagebrush lizard (Species of Greatest Conservation Need (SGCN)), and lesser prairie-chicken (SGCN). Animal species observed within this vegetation type during the October 2018 and/or April 2019 site visits included, but are not limited to western box turtle, queen butterfly, and various bird species and inactive bird nests. The Maintained Grassland observed vegetation type is mostly located within the central extent of the survey area along the maintained roadway and graded area. Approximately 17.8 acres of this vegetation type would be impacted by the proposed project.

All Indicated Changes are in response to RAI ECO-1

This vegetation type provides potentially suitable habitat for an array of migratory bird species as well as the state-listed Texas horned lizard. Animal species observed within this vegetation type during the October 2018 and/or April 2019 site visits included, but are not limited to eastern cottontail, various bird species, and inactive bird nests.

See ER Attachment 3-5, Section 5.0 for information on vegetative species.

All areas suffer from some level of human-induced disturbance. *The survey area primarily consists of vacant, undeveloped land. Surrounding land use is also primarily undeveloped land with heavy industrial sites in the vicinity of the survey area. The vegetative species observed are addressed in Section 5.0.*

3.5.3.2 Wildlife

The mourning dove is the most abundant and widespread bird species observed. *Other bird species include Grasshopper Sparrow, Red-tailed Hawk, Swainson's Hawk, Lark Bunting, Cactus Wren, Northern Cardinal, Pyrrhuloxia, Hermit Thrush, Lark Sparrow, Norther Harrier, Northern Bobwhite, American Crow, Ladder-backed Woodpecker, Kark-eyed Junco, Loggerhead Shrike, Lincoln's Sparrow, Song Sparrow, Northern Mockingbird, Ash-throated Flycatcher, Vesper Sparrow, Great-tailed Grackle, Ruby-crowned Kinglet, Yellow-rumped Warbler, Dickcissel, Chipping Sparrow, Field Sparrow, Western Meadowlark, Curve-billed Thrasher, Scissor-tailed Flycatcher, Western Kingbird, Barn Owl, and White-crowned Sparrow.*

Scientific names are included in Section 6.0 of the Ecological Resources Report.

The only mammals observed or positively identified in the study area from sign were black-tailed jackrabbit (*Lepus californicus*) *and mule deer.* Previous surveys have identified a variety of rodents [e.g., Ord's kangaroo rat (*Dipodomys ordii*), silky pocket mouse (*Perognathus flavus*), deer mouse (*Peromyscus maniculatus*), northern grasshopper mouse (*Onchomys leucogaster*), southern plains woodrat (*Neotoma micropus*), and plains harvest mouse (*Reithrodontomys montanus*)] (Ortega, Bryant, Petit, & Rylander, 1997). Collared peccaries (*Tayasu tajacu*) have been observed east of the CISF. Rodent tracks are abundant, particularly in sandy areas.

No evidence of amphibians has been found at the *playas* located north and south of the CISF.

Reptiles observed in the study area include *the six-lined racerunner and Western box turtle (CMEC, 2019).*

Common invertebrate species have been observed at various locations *including the Robber fly, Queen butterfly, dung beetle, red harvester ant, and darkling beetle*. Grasshoppers are abundant, and most CISF harbor one or more ant species. Flies and mosquitoes are also common.

3.5.3.3 Birds

Birds were surveyed through observation and by call at the proposed CISF and its vicinity to document species, potential breeding species, seasonal migrants, and winter residents. A barn owl (*Tyto alba*) was observed at Baker Spring during the March 2004 survey. A recently dead specimen was found in the same area during the June 2006 surveys. The species is common in all four southwestern deserts. Barn owls hunt for rodents along desert washes, where trees are present. Suitable habitat exists at Baker Spring and southeast of the CISF. No washes or trees are present in areas of proposed CISF development. *Bird species observed in 2018 and 2019 are in Section 3.5.3.2.*

All bird species encountered on and near the proposed CISF are consistent with the range information provided in (Ortega, Bryant, Petit, & Rylander, 1997) and references cited therein and with other records from the vicinity near the CISF. It is likely many of the summer resident species breed and raise their young on or in the vicinity of the CISF.

The US Fish & Wildlife Service (FWS) listed the lesser prairie chicken as "threatened" in 2014. However, the FWS de-listed the species in July 2016, to comply with a court order. The FWS currently is conducting a more detailed review of the status of the species, and lists the species as "under review." Historically, a Waste Control Specialists ranch manager reported seeing a female lesser prairie chicken (*Tympanuchus pallidicinctus*) near the CISF (Ortega, Bryant, Petit, & Rylander, 1997) but the sighting was never verified. Although the CISF is outside the known range of the species, areas of suitable habitat (e.g., shinnery oak) are present within a 5 km (3.1 mi) radius of the CISF. No active leks or prairie chickens have been detected during the 2004 Lyons surveys (Lyons, 2004). Surveys were conducted by a researcher who was familiar with standard techniques used to census this species in New Mexico and Texas.

New Mexico's Department of Game and Fish completed a lesser prairie chicken survey in 2000, examining the northern portion of Lea County, along with portions of Chavis, Roosevelt, and De Baca counties (Massey & Dunn, 2000). The New Mexico report did not include the area adjacent to the CISF; however, more recent surveys for the lesser prairie chicken conducted in

September 2003 and April 2004 in support of the licensing of the nearby NEF indicated the species does not occur on land of the proposed CISF. No visual sightings or aural detections were made and the researchers concluded there is little potential habitat in the survey area.

A LPC survey was conducted in Andrews County in 2004 that yielded negative results (Lyons 2004). Despite the negative results of the survey in 2004, a presence/absence survey for the LPC was conducted by CMEC within the survey area during the April 2019 field investigations after observing potentially suitable habitat in October 2018 in the Havard Oak Dunes vegetation type (approximately 76 acres) within the northern extent of the survey area (see Figure 6 of Attachment 3-6). The survey was conducted by Ryan Blankenship (who has completed WAFWA technical service provider (TSP) training in 2016) in accordance with the Western Association of Fish and Wildlife Agencies' LPC Survey Protocol for Project Clearance (Updated February 2016).

The survey was conducted over three days during the April 2019 site visit to verify the presence/absence of this species. Surveys were conducted in the morning hours, lasted approximately 1.5 hours, and consisted of utilizing seven fixed-point listening stations which were placed within the survey area and within a one-mile vicinity of the survey area (see Figure 8 of Attachment 3-6). This diurnal survey time is optimal for observing LPC that may occur within or adjacent to the survey area. The survey was conducted during the LPC survey timeframe outlined in the Western Association of Fish and Wildlife Agencies' LPC Survey Protocol for Project Clearance (Updated February 2016) survey protocol. Observers listened for audible calls and visually surveyed suitable habitat within a 5-minute time period at each fixed-point listening station each day. Attachment C of Attachment 3-6 includes the dates and times for each survey event and atmospheric conditions (temperature, wind speed, and cloud cover).

Although potentially suitable habitat for the LPC is located within the survey area, the April 2019 presence/absence survey did not locate any individuals of these species within the survey area. There are no recorded TXNDD Elements of Occurrence within 1.5 miles of the study area (see Figure 7 of Attachment 3-6). It is believed that the habitat located within the survey area is not occupied by these species at this time. A summary of the Lesser Prairie-Chicken survey effort is included in Table 5 of Attachment 3-6 and Attachment C of Attachment 3-6. The results of this survey effort are consistent with a statewide survey conducted in 2000 and a survey conducted within and adjacent to the survey area in 2004 (NMDGF 2000, Lyons 2004).

All Indicated Changes are in response to RAI ECO-1

The USFWS currently lists the lesser prairie chicken as *a "de-listed"* species. Recent decline in population numbers of the lesser prairie chicken, a species that prefers shinnery oak habitat, has shifted concern on public lands towards protection of this habitat.

3.5.3.4 Aquatic

Aquatic ecological studies have not been conducted in the area because there are no permanent—and only occasionally ephemeral—sources of surface water available on or in the vicinity of the proposed CISF. These are insufficient to support aquatic species.

United States Army Corps of Engineers (USACE) has confirmed that no waters of the United States (including wetlands) are present within the survey area (see ER Attachment 3-3).

The TCEQ has confirmed that wetlands are not located in the vicinity of the proposed CISF. Pools of water are intermittently present in the vicinity of the Baker Spring outcrop, located approximately 0.58 km (0.36 mi) west of the proposed CISF. These pools may support amphibians [such as spadefoot toads (*Scaphiopus multiplicatus*) and the Texas toad (*Bufo speciosus*),)] and invertebrates adapted to take advantage of such locations.

3.5.4 Rare, Threatened, and Endangered Species Known or Potentially Occurring in the Project Area

Lists of rare, threatened, and endangered species maintained by the USFWS and TPWD were consulted to determine species of potential occurrence in the vicinity of the survey area. In all, 41 federally listed endangered, threatened, candidate species, or state-listed endangered, threatened species, or SGCNs were identified as having the potential to occur in Andrews County, TX. For more details, see Attachment 3-6, Section 6.0 of the ER.

All Indicated Changes are in response to RAI ECO-1

3.5.5 Major Vegetation Characteristics

The general vegetation community type at the proposed CISF is classified as Plains-Mesa Sand Scrub (Dick-Peddie, 1993) characterized by the presence of significant amounts of the indicator species shinnery oak, a low growing shrub. 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 western Andrews County, Texas. *See Attachment 3-6, Section 5.0 of the ER for more information on vegetation.*

3.5.6 Habitat Importance

Attachment 3-6, Section 6.2, Table 3 provides a complete list of the threatened, endangered, and other important species and whether the land around the proposed CISF provided suitable habitat for those species.

3.5.7 Location of Important Travel Corridors

None of the important wildlife species identified at the proposed CISF are migratory in this part of their range; therefore, these species do not have established migratory travel corridors. However, three of the species, mule deer, lesser prairie chicken, and scaled quail, are highly mobile and utilize a network of diffuse travel corridors linking base habitat requirements (i.e., food, water, cover, etc.). These travel corridors may change from season to season as well as from year to year for each species and can occur anywhere within the species' home range.

Mule deer and scaled quail utilize and often thrive in altered habitats and can and do live in close proximity to humans and human activities. For these two species, any travel corridors that would potentially be blocked by the proposed CISF would easily and quickly be replaced by an existing or new travel corridor linking base habitat requirements for these two species.

Field investigations conducted in October 2018 confirmed the potentially suitable habitat for the lesser-prairie chicken, although none were seen. See Attachment 3-6, Section 3.3 for more information.

The sand dune lizard is not a highly mobile species and is confined to small home ranges within the active sand dune-shinnery oak habitat type. Travel corridors are not important features of the lizard habitat. A field survey confirmed that the sand dune lizard is not present at the proposed CISF.

All Indicated Changes are in response to RAI ECO-1

The black-tailed prairie dog is not highly mobile. Considering that prairie dogs dig extensive, deep, and permanent burrows (i.e., they do not migrate) and are not dependent on free water, travel corridors are not important features of the prairie dog habitat. A field survey found no evidence of black-tailed prairie dogs at the proposed CISF.

3.5.8 Important Ecological Systems

The proposed CISF contains fair to poor quality wildlife habitat. The Plains-Mesa Sand Scrub vegetative community has been impacted by past land use practices. The proposed CISF has previously been grazed by domestic livestock for over a hundred years, has a Texas state highway along the southern boundary, a rail line spur right-of-way borders the southern perimeter of the CISF, and a gravel access road runs north to south along the south and east perimeter of the CISF. The degraded habitat generally lacks adequate cover and water for large animal species, and annual grazing by domestic livestock impacts ground nesting bird species.

Based on recent field studies and the published literature, there are no onsite important ecological systems that are especially vulnerable to change or that contain important species habitats such as breeding areas, nursery, feeding, resting, and wintering areas, or other areas of seasonally high concentrations of individuals of important species. The species selected as important for the CISF are all highly mobile species, with the exception of the sand dune lizard and the black-tailed prairie dog, and are not confined to the CISF or dependent on habitats at the CISF. The Plains-Mesa Sand Scrub vegetation type covers hundreds of thousands of acres in western Andrews County Texas and is not unique to the proposed CISF.

Critical habitat for the lesser prairie chicken occurs in New Mexico northwest of the CISF. Field surveys for the lesser prairie chicken conducted in September 2003 and April 2004 *and October 2018 and April 2019* indicated the species does not occur on the proposed CISF.

Although the CISF does contain sand dune/shinnery oak communities, which could be potential sand dune lizard habitat, field surveys conducted in October 2003 and June 2004 *and October 2018 and April 2019* revealed that the sand dune lizards are not present on the CISF.

The high density of shrubs on the proposed CISF is not optimal prairie dog habitat. No prairie dogs were found onsite during the September 2003 *and October 2018 and April 2019 surveys.*

have probably increased. No other environmental stresses on the terrestrial wildlife community (e.g., disease, chemical pollutants) have been documented at the proposed CISF.

3.5.15 Description of Ecological Succession

Long-term ecological studies of the proposed CISF are not available for analysis of ecological succession at this specific location. The property is located in a *Havard Shin-Oak Mesquite Brush* vegetation community, which is a climax community that has been established in western Andrews County for an extended period. The majority of the subject property is a mid-successional stage, primarily due to historic grazing of domestic livestock and climactic conditions.

Development of the proposed CISF would be limited to an access road for a neighboring property and faded two-track roads along the perimeter of the property; the two-track roads are probably used for fence maintenance. These areas contain some colonizing plants that are common to disturbed ground. An example of a disturbed ground colonizing species in western Andrews County is broom snakeweed (*Gutierrezia sarothrae*). The proposed CISF has been grazed for an unknown period of time, although regional grazing by domestic livestock has occurred for 150 years. Evidence of past grazing was also apparent from reduced amounts of standing vegetation. Moderately high densities of honey mesquite (*Prosopis glandulosa*) seedlings were observed during the vegetation survey. Reduced grass canopy from historic and contemporary livestock grazing may be contributing to the colonization of honey mesquite due to reduced competition. Honey mesquite is considered noxious on rangeland because of its ability to compete for soil moisture and its reproductive ability.

3.5.16 Description of Ecological Studies

Cox-McLain Environmental Consulting completed an Ecological Resources Report for the proposed CISF (Attachment 3-6). ISP partner WCS completed several ecological assessments for licensing activities starting in 1997. The reports included in the WCS License application for the LLRW Appendix 2.9.1 (WCS, 2007) are listed below:

1. *"Habitat Characterization and Rare Species Survey for the Proposed Low Level Waste Repository, Andrews County, TX;" Doug Reagan and associates (2004).*

All Indicated Changes are in response to RAI ECO-1

2. *"Supplemental Survey to Ecological Assessment of the Low Level Waste Depository, Andrews County, Texas;" URS (2007).*

3. *"Ecological Assessment of the Low Level Waste Depository, Andrews County, TX;" Ecology Group (1997).*

4. *"Survey for the Active Lesser Prairie-Chicken Leks: Spring 2000;" New Mexico Department of Game and Fish (2000).*

5. *"Survey of Lesser Prairie Chickens at the Low Level Waste Depository, Andrews County, TX;" Eddie K. Lyons (2004).*

These additional ecological studies have been performed for the area adjacent to the proposed CISF:

1. *"Status and Habitat of the Sand Dune Lizard at National Enrichment Facility Project;" GL Environmental, Inc.; ADAMS Accession Number ML040850611 (2003).*

2. *"The Habitat and Geographic Range of the Sand Dune Lizard in Lea County, New Mexico in the vicinity of Section 32, Township 21S, Range 38E;" GL Environmental, Inc.; ADAMS Accession Number ML042170040 (2004).*

3. *"Environmental Assessment Report Prepared for Application for Renewal of Radioactive Material License R04971 Waste Control Specialists LLC Andrews County, Texas;" Waste Control Specialists (2008).*

3.5.17 Information on Rare, Threatened, and Endangered Species Sightings

No rare, threatened, or endangered species have been observed in the vicinity of the proposed CISF.

3.5.18 Agency Consultation

Consultation was initiated with all appropriate federal and state agencies and affected Native American Tribes. Consultation Documents are presented in Attachment 3-3 *and Attachment 3-6*.

All Indicated Changes are in response to RAI ECO-1

Proprietary Information in Attachment 3-6 (114 pages)
Withheld Pursuant to 10 CFR 2.390.

All Indicated Changes are in response to RAI ECO-1

AIR QUALITY (AQ)

RAI AQ-1

Supplement the existing description of applicable air permits to address the following:

- Whether the TCEQ permit would be a new permit or a modification of the existing WCS site permit
- Whether the New Mexico Environment Department air permitting requirements could apply to the proposed action (specifically, construction of the rail side track).

ER Section 1.3.2.3 states that ISP would obtain from the TCEQ any required air permits to support construction and operation of the proposed action. However, the ER is unclear whether this would be a new permit or a modification to the existing WCS site air permit. In addition, it is unclear whether some of the railroad side track construction occurs in New Mexico (see RAI PA-2); however, the ER does not provide information about air permitting associated with the New Mexico Environment Department. Specifically, this information is needed to support the NRC staff's description and evaluation of applicable statutory, regulatory, and permitting requirements in the NRC's EIS.

This information is needed in accordance with 10 CFR 51.45(d), which requires that the ER include a description of the status of compliance with applicable environmental quality standards and requirements, including limitations and requirements which have been imposed by Federal, State, regional, and local agencies having responsibility for environmental protection.

Response to RAI AQ-1:

Construction of the proposed CISF will take place completely within the state of Texas. The proposed rail spur that was to be constructed partially within the state of New Mexico has been removed from the project and will not be built (See response to RAI PA-1). Therefore, permitting obligations that relate to the state of New Mexico are no longer necessary, with permitting requirements taking place in the state of Texas under the jurisdiction of the Texas Commission on Environmental Quality (TCEQ). ER Section 1.3.2.3 has been updated to explicitly state that all construction will take place within the state of Texas and to summarize the following information:

- Since the proposed CISF will not directly affect operations or emissions from the existing areas of the site that are covered under the New Source Review (NSR) permit or other Permits By Rule (PBR) at the site, potential stationary sources at the proposed CISF are likely eligible for a new authorization under PBR per 30 TAC §106.4 without amending the site's existing NSR permit.

- Permitting requirements typically apply to stationary sources of emissions at a site. Emissions evaluated for this project pertain to mobile on-road and non-road sources that are not subject to permitting requirements. Therefore, it is not expected that the emissions quantified for this exercise will require permitting from the state as they are not stationary and are temporary as they pertain to construction at the site. Equipment in use for storage module transport are mobile sources and will not be subject to permitting requirements. Additionally, it is expected that the buildings and other structures at the site that require electricity will be connected to existing infrastructure, and the need for electric generating units (EGUs) will not be required for electrical power. Therefore, EGUs have not been quantified for the purpose of this exercise.

Impact:

ER Section 1.3.2.3 has been revised as described in the response.

1.3.2.3 Preservation of Air Quality

Construction of the proposed CISF will take place completely within the state of Texas. Permitting requirements taking place in the state of Texas are under the jurisdiction of the Texas Commission on Environmental Quality (TCEQ). Construction and operations activities at the CISF are not expected to have any measurable impact on the local air quality since no significant criteria or hazardous air pollution emissions would occur. Gaseous criteria pollutant emissions at the CISF are limited to small propane space heating furnaces, a standby emergency diesel generator, a fire pump diesel engine, heavy haul trucks, cask transporters and workers' private vehicles.

Small space heating sources of air pollutants less than one million British Thermal Unit (BTU) per hour heat input are exempt from applicable air quality regulations. The emergency and fire pump diesel engines, which are non-construction stationary sources of air pollutants smaller than 150 kW and not operating more than 250 hours per year, would not trigger any new source review requirements. Moreover, the heavy haul trucks, transporters, and private vehicles are considered mobile sources, which are not regulated by the TCEQ.

Since the proposed CISF will not directly affect operations or emissions from the areas of the existing Waste Control Specialists facility that are covered under the New Source Rule (NSR) permit or other Permits By Rule (PBR), potential stationary sources at the CISF are likely eligible for a new authorization under PBR per 30 TAC 106.4 without amending the site's existing NSR permit.

Permitting requirements typically apply to stationary sources of emissions at a site. Emissions anticipated during construction and operation of the CISF would be from mobile on-road and non-road sources that are not subjected to permitting requirements. Additionally, the buildings and other structures at the site that require electricity will be connected to existing infrastructure and will not rely on electric generating units for standard operating electrical power. It is not anticipated that the emissions from the construction and operation of the CISF will require permitting from the state of Texas.

Any potential air quality-related impacts associated with construction of the CISF would result from gaseous pollutant emissions from diesel-powered construction equipment and from fugitive dust emissions from excavation activities and construction equipment. However, for a project of this size, steps need to be taken to minimize fugitive dust emissions. Accordingly, a BMP

Emissions Control Plan would be developed to provide assurance that fugitive dust emissions would be effectively managed and minimized throughout all of the construction phases of the project. This BMP Emission Control Plan would include dust control techniques, such as watering and/or chemical stabilization of potential dust sources. *Dust control will be maintained under the requirements of the Construction General Permit (Table 1.3-1).*

There are no expected airborne effluents of radionuclides from normal operations at the CISF. Accordingly, airborne effluent monitoring should not be required.

Refrigerants used for air conditioning at the CISF would consist of Class II refrigerants (i.e., non-ozone depleting substances). Therefore, permits for Clean Air Act Title VI, Stratospheric Ozone Protection, relative to the usage and storage of refrigerants would not be required.

1.3.2.4 Pollution Prevention and Waste Management

The CISF project is committed to pollution prevention practices and would incorporate all TCEQ pollution prevention goals, as identified in 30 TAC 335. Non-hazardous wastes from construction activities would be disposed of appropriately. During operations, the small quantities of waste generated in the health physics lab and the potentially hazardous materials, such as lead, dye-penetrant materials (i.e., phosphorescent materials), hydraulic fluids, and miscellaneous lubricants used at the CISF, would be appropriately handled and disposed of. The small quantities of hazardous wastes that would be generated are expected to be much less than 100 kg/month. Thus, the CISF would qualify as a Conditionally Exempt Small Quantity Generator (CESQG). All hazardous wastes that are generated would be identified, stored, and disposed of in accordance with state and federal requirements applicable to CESQGs. Since the CISF design does not include Underground Storage Tanks (USTs), no UST registration with TCEQ would be required.

1.3.2.5 Historic and Archeological Resources

Because licensing of the CISF would be a federal action by NRC, Section 106 of the National Historic Preservation Act (NHPA) applies to the project. Coordination with the Texas Historical Commission (THC) and New Mexico State Historic Preservation Office (SHPO) has been completed for the CISF and a buffer area around the anticipated construction area. An archeological survey of the proposed facility was completed and no significant sites were identified within the area surveyed. Should the impacted area change, additional archeological

RAI AQ-2

Provide either summarized onsite meteorological data (e.g., yearly, seasonally, monthly) or provide the data in Attachment A of the SAR Chapter 2 in a spreadsheet rather than a PDF file.

Attachment A of the SAR Chapter 2 (a PDF file about 5,000 pages long) contains the hourly data from four onsite meteorological stations over a 6 year period from 2010 to 2015. However, summary information for the onsite meteorological stations is limited to wind speed and direction averaged over a 5 year period (see ER Section 3.6.4). Onsite meteorological data supports the general description of the affected environment, and any inclusion of this data in the EIS would be in summary form. Specifically, additional information on the onsite meteorological data is needed to support NRC's description of the proposed action and the affected environment in the EIS.

This information is needed in accordance with 10 CFR 51.45(b), which requires that the ER include a description of the affected environment.

Response to RAI AQ-2:

The native files (Excel™ spreadsheets) containing the meteorological data in Attachment A of SAR Chapter 2 is provided in Enclosure X, as requested.

Impact:

No change as a result of this RAI.

RAI AQ-3

Supplement the regional characterization of the annual air emissions by:

- Expanding the current emission estimates in ER Table 3.6-8 to include (i) particulate matter PM10 and non-radiological hazardous air pollutants emission estimates and (ii) emissions data from New Mexico where some of the proposed action activities might occur.
- Addressing future estimated regional emissions over the 40-year timeframe of the proposed action (e.g., how the current emission estimates in ER Table 3.6-8 are expected to change over time).
- If available, addressing both current and future air emissions from the existing WCS site activities.

ER Table 3.6-8 provides current annual emissions for some criteria pollutants for Andrews County and the State of Texas. However, this table does not include estimates for particulate matter PM10 or non-radiological hazardous air pollutants. Also, this table does not include emission estimates from New Mexico, where a portion of the proposed action's activities, the construction of the CISF railroad side track, might occur (see RAI PA-2). Finally, ER Table 3.6-8 only presents a snapshot of current conditions and does not address regional emissions over the 40-year lifetime of the proposed action. Specifically, the regional annual air emissions are needed, including key air emissions (e.g., particulate matter PM10), to support the NRC staff's characterization of the environment where the proposed action's activities occur over the lifetime of the proposed action. The ER does not provide the air emission generated by the existing WCS facilities, which are located in close proximity to the proposed CISF site.

This information is needed in accordance with 10 CFR 51.45(b), which requires that the ER include a description of the affected environment.

Response to RAI AQ-3:

Emissions of PM10 and non-radiological hazardous air pollutants (HAPs) as defined by the Federal Clean Air Act have been included for this response and are included in replacement ER Table 3.6-8.

The rail spur that was planned to be partially constructed in New Mexico has been removed from the overall project. Therefore, there is not a need to expand the current emissions estimates found within ER Table 3.6-8 to include emissions data from the state of New Mexico as no permitting or construction activities will take place there.

The most recently available emission data for the State of Texas and Andrews County are contained within the Environmental Protection Agency's (EPA's) National Emission Inventory database. The most recently available data for the National Emission Inventory is from 2014. The next cycle of Emission Inventory data is for 2017, but will not be available until March 31, 2020 at the earliest according to EPA.

Based on currently available data, emission increase trends were determined and applied to 2014 baseline data and increased every five years until 2059 (assuming the CISF closes in 2061). Emissions of CO, NO_X, PM10, PM2.5, and SO_2 experienced a decline based on data trends from 2002-2014. As a conservative assumption, a 1% increase was applied every year to these pollutants. Emissions of volatile organic compounds (VOCs) and HAPs have shown an increase based on available data and this exercise uses trends determined from these datasets to estimate future emissions of these pollutants. Estimations of projected area emissions for Andrews County and the State of Texas are included in revised ER Table 3.6-8.

Emissions of pollutants at the existing Waste Control Specialists site in Andrews County have remained largely consistent from year to year for regulated pollutants. Depending upon customer demands and the amount of waste received year to year, there may be slight variation in the amount of emissions that originate from the existing site due to waste processing and earthmoving operations within the landfills. ISP and Waste Control Specialists do not expect to expand the site beyond what is presently authorized and what is proposed in this NRC filing for the foreseeable future. Actual annual emission totals from the last five years (2013-2018) at the existing Waste Control Specialists site are included in Table AQ-3-1.

Section 3.6 has also been updated to point to ER Section 4.6 where more air quality information can be found.

Table AQ-3-1
Existing Site Actual Annual Emissions - 2013-2018

Pollutant	2013	2014	2015	2016	2017	2018
NOx	0.30	0.30	0.68	1.66	1.18	0.99
CO	0.11	0.11	0.18	0.37	0.26	0.22
SO_2	0.02	0.02	0.05	0.12	0.08	0.07
PM10	3.90	3.67	5.33	5.40	1.02	8.25
PM2.5	0.55	0.51	0.77	0.85	0.20	1.20
VOC	1.25	1.43	1.26	2.22	0.75	0.68

Impact:

ER Section 3.6 and Table 3.6-8 have been revised as described in the response.

Table 3.6-8, 2014 Baseline Emissions and Lifetime Projections

	CO[1]	NO_X[1]	PM_{10}[1]	$PM_{2.5}$[1]	SO_2[1]	VOC[2]	HAP[2]
2014 Andrews County Baseline	13,145	9,184	996	310	1,968	54,638	1,136
2014 Statewide Baseline	4,625,519	1,334,750	1,305,098	315,644	461,118	6,772,080	170,090
5-Year Incremental Increase	5.00%	5.00%	5.00%	5.00%	5.00%	17.66%	2.40%

Andrews County Emissions Increase Estimates (tpy)

	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC	HAP
2019 Estimate	13,802	9,643	1,046	326	2,066	64,290	1,163
2024 Estimate	14,492	10,125	1,098	342	2,169	75,646	1,191
2029 Estimate	15,217	10,631	1,153	359	2,278	89,008	1,219
2034 Estimate	15,978	11,163	1,211	377	2,392	104,730	1,249
2039 Estimate	16,776	11,721	1,271	396	2,511	123,229	1,278
2044 Estimate	17,615	12,307	1,335	416	2,637	144,996	1,309
2049 Estimate	18,496	12,922	1,402	437	2,769	170,609	1,341
2054 Estimate	19,421	13,568	1,472	459	2,907	200,745	1,373
2059 Estimate	20,392	14,247	1,545	482	3,053	236,204	1,406

All Indicated Changes are in response to RAI AQ-3

Statewide Emissions Increase Estimates (tpy)

	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2	VOC	HAP
2019 Estimate	4,856,795	1,401,488	1,370,353	331,426	484,174	7,968,296	174,172
2024 Estimate	5,099,634	1,471,562	1,438,871	347,998	508,383	9,375,811	178,353
2029 Estimate	5,354,616	1,545,141	1,510,814	365,398	533,802	11,031,949	182,634
2034 Estimate	5,622,347	1,622,398	1,586,355	383,667	560,492	12,980,626	187,017
2039 Estimate	5,903,464	1,703,517	1,665,672	402,851	588,517	15,273,516	191,506
2044 Estimate	6,198,637	1,788,693	1,748,956	422,993	617,943	17,971,421	196,103
2049 Estimate	6,508,569	1,878,128	1,836,404	444,143	648,840	21,145,882	200,810
2054 Estimate	6,833,998	1,972,034	1,928,224	466,350	681,282	24,881,078	205,630
2059 Estimate	7,175,698	2,070,636	2,024,635	489,668	715,346	29,276,057	210,565

NOTES:

1. Historical trends for these pollutants have shown decreases in the evaluated dataset from 2002-2014. As a conservative estimation to account for industrial and population growth, assuming control technology remains constant, a 1% increase per year has been assumed.
2. Based on historical trends for these pollutants in the evaluated dataset from 2002-2014.

All Indicated Changes are in response to RAI AQ-3

A ton is equal to 0.9078 metric ton; VOC-volatile organic compounds; NOx-nitrogen oxides; CO-carbon monoxide; SO2-sulfur dioxide; PM2.5-particulate matter less than 2.5 microns. Source: (EPA, 2016)

See ER Section 4.6 for more information.

3.7 NOISE

Noise is defined as "unwanted sound." At high levels noise can damage hearing, because sleep deprivation, interfere with communication, and disrupt concentration. In the context of protecting the public health and welfare, noise implies adverse effects on people and the environment. The sound we hear is the result of a source inducing vibration in the air, creating sound waves. These waves radiate in all directions from the source and may be reflected and scattered or, like other wave actions, may turn corners. Sound waves are a fluctuation in the normal atmospheric pressure, which is measurable. This sound pressure level is the instantaneous difference between the actual pressure produced by a sound wave and the average, or barometric, pressure at a given point in space. This provides us with the fundamental method of measuring sound, which is in "decibel" (dB) units.

The dB scale is a logarithmic scale because the range of sound intensities is so great that it is convenient to compress the scale to encompass all the sound pressure levels that need to be measured. The sound pressure level is defined as 20 times the logarithm, to the base 10, of the ratio of the pressure of the sound measured to the reference pressure, which is 20 μPa (0.0002 dyne/cm^2). In equation form, sound pressure level in units of dB is expressed as:

$$dB = 20 \text{ Log10 } P/P_r$$

Where: P = measured sound pressure level μPa (dynes/cm^2)

P_r = reference sound pressure level 20 μPa (0.0002 dyne/cm^2)

Due to its logarithmic scale, if a noise increases by 10 dB, it sounds as if the noise level has doubled. If a noise increases by 3 dB, the increase is just barely perceptible to humans. Additionally, as a rule-of-thumb the sound pressure level from an outdoor noise source radiates out from the source, decreasing 6 dB per doubling of distance. Thus, a noise that is measured at 80 dB 15 m (50 ft) away from the source would be 74 dB at 30.5 m (100 ft), 68dB at 61 m (200 ft), and 62 dB at 122 m (400 ft). However, natural and man-made obstructions such as trees, buildings, land contours, etc. would often reduce the sound level further due to dissipation

RAI AQ-4

Characterize the potential air emissions based on the entire range of the proposed action's emission sources. Consideration should be given, but not limited, to the following:

- Combustion emissions from mobile sources, including onsite, local, and national (i.e., SNF) transportation.
- Combustion emissions from cross-country transport of precast concrete pieces to the proposed site if an onsite concrete batch plant is not used.
- Emissions from the railroad side track construction, if not already included.

ER Section 1.3.2.3 indicates that mobile sources (e.g., train, heavy haul trucks, transporters, and private vehicles) were not included as part of the air quality impact analyses because these sources are not regulated by TCEQ.

ER Section 2.2.2.6 states that if an onsite concrete batch plant is not constructed, then precast concrete pieces will be transported cross country to the proposed WCS site. Potential emissions from this activity were not included in the ER analyses.

ER Section 3.2.3 states that a railroad side track will be constructed. It is unclear if emissions from this activity were included in the project emission estimates described in ER Section 4.2.1. This information is needed to accurately characterize the entire range of emission sources and project emissions from the proposed action in the EIS.

This additional information is needed in accordance with 10 CFR 51.45(b), which requires that the ER include a description of the proposed action and its potential impacts on the environment.

Response to RAI AQ-4:

Emission estimates for the construction and operational phases of the CISF have been quantified and are included in updated ER Section 4.6. The emission estimates are calculated in Excel™ Spreadsheet T190815_EMISSIONS ESTIMATES.xlsx, which is provided in Enclosure ZZ for staff use. Emission factors are taken from the EPA's AP-42 [1], Chapter 3.3 (Gasoline and Diesel Industrial Engines) and Chapter 11.9 (Western Surface Coal Mining). Emissions estimated include those of the combustion products from equipment and vehicles and fugitive particulate matter from earthmoving during construction and operations. Estimates include the construction of the buildings and the rail side track to be built in Texas. Rail construction in New Mexico has been eliminated from the project.

Emissions regarding spent nuclear fuel (SNF) transportation are discussed in ER Section 4.2.9.

Emissions from cross-country transportation of precast concrete pieces has been eliminated from this project. Concrete construction will take place on site using Ready-Mix trucks from local vendors. Emissions from these activities have been quantified for this project.

Emissions from the proposed CISF are not expected to fall into the major source category, and therefore the site is considered to be a minor source for air pollutants.

References:

1. EPA (1995), (Environmental Protection Agency), "Compilation of Air Pollutant Emission Factors, Volume 1, Stationary Point and Area Sources," Fifth Edition AP-42, January 1995.

Impact:

ER Section 4.6 has been revised and Tables 4.6-1, 4.6-2, 4.6-3, and 4.6-4 have been added as described in the response.